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Assessment of Drain Inlet Cleaning and Waste Disposal

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California Department of Transportation

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INTRODUCTION

As part of Caltrans ongoing efforts to maintain State highways, the Department conducts extensive cleaning of its drainage system including drain inlets. Vactor™ trucks are often used to remove waste material from the drainage system. The waste material from the Vactor™ is emptied at designated decanting sites, where the material is stored and allowed to dry. Dry waste is ultimately removed from the decanting sites and transported to landfills for final disposal, or reused as highway fill material for maintenance projects.

Caltrans current National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit (Order No. 99-06-DWQ), Section I.1.c requires the management of waste generated from drainage system cleaning. All waste from the drainage system that poses a threat to water quality must be removed and disposed of properly.

The purpose of this report is to 1) provide an assessment of Caltrans District 4 Vactor™ operations and current Best Management Practices (BMPs) for cleaning drain inlets; 2) provide a characterization of the dry waste present at decanting sites; 3) provide assessment of current decanting sites; and 4) provide recommendations for the placement and configuration of decanting sites and waste management.

The approach used in this study is summarized as follows. First, all of the District 4 decanting sites were identified and located. Drain inlet clean-out operations were observed and assessed. Each of the identified decanting sites was inspected and observations were made regarding general site characteristics. During decanting site inspections, decanted waste material samples were collected and delivered to an analytical laboratory for analyses. The analytical results were then compiled, evaluated for data quality, and compared to hazardous waste limitations.

This report is organized in major sections as follows:

- Decanting Sites Included in This Study – This section presents the locations of the decanting sites visited for the purpose of sample collection and site assessment.
- Assessment of Drain Inlet Clean-Out Operations – This section provides a description of observed drain inlet clean-out field operations.
- Monitoring Methods – This section provides an overview of methods used in the collection of dry waste samples from decanting sites.
- Quality Assurance/Quality Control (QA/QC) – This section presents the results of QA/QC analyses associated with decanting site dry waste monitoring results.
- Decanting Waste Monitoring Results – This section presents the analytical results from the decanting waste monitoring effort.
- Decanting Site Assessment – This section provides observations made during decanting site visits.

- Data Observations and Conclusions – This section provides summary statistics and conclusions regarding drain inlet clean-out waste analytical results.
- Recommendations – This section provides recommendations regarding drain inlet cleaning operations, decanting sites, and waste management.

DECANTING SITES INCLUDED IN THIS STUDY

District 4 maintains numerous decanting sites throughout the San Francisco Bay Area. All decanting sites in use at the time of this study are included in this report. A list of the decanting sites and their locations is provided in **Table 1**. Maps showing the locations of the decanting sites in District 4 are provided in **Appendix A**. **Table 1** lists 18 decanting sites; however, Site 7 was determined to no longer be in use as a decanting site. Therefore, the number of decanting sites included in this study totals 17. These decanting sites are located in a variety of surroundings, from urban interstates to rural highways. The drain inlet clean-out waste deposited at these decanting sites is collected from areas throughout the entire Bay Area.

For the purpose of this report, decanting sites are defined as sites that receive Vactor™ waste from drainage system clean-out and maintenance operations. These sites include decanting-pits where drain inlet clean-out material is deposited and allowed to dry. Many of these sites are also used as temporary storage sites, where materials other than Vactor™ waste are stored. The temporary storage sites store other types of waste and materials such as highway sweeper waste, highway litter, highway grindings, base material, and various other materials. During highway cleaning operations, sweepers and litter collection crews may deposit piles of sweeper and litter waste at temporary storage sites where the piles remain until they are removed prior to the onset of the wet-season. The highway sweeper waste and litter piles, and other materials stored, are handled separately from the decanting waste. Temporary storage sites are evaluated in a separate effort (see *Temporary Storage Site Assessment*, November 2003).

Table 1. Decanting Sites

Site No.	Site Code	Region	County	Route	Post Mile	Direc-tion	Location Notes
1	SON-101-3.66-SB	North Bay	Sonoma	101	3.66	SB	Petaluma Yard
2	SON-116-6.15-WB	North Bay	Sonoma	116	6.15	WB	Sheridan Ranch
3	SOL-80-41.2-WB	North Bay	Solano	80	41.2	WB	Kidwell
4	SOL-80-32.6-EB	North Bay	Solano	80	32.6	EB	Midway Road
5	SOL-80-23.9-WB	North Bay	Solano	80	23.9	WB	Pena Adobe
6	SOL-12-2.6-EB	North Bay	Solano	12	3.2	EB	
7	SOL-12-17.5-EB	North Bay	Solano	12	17.5	EB	No longer a decanting site
8	CC-4-30.0-EB	Delta	Contra Costa	4	30.0	EB	Co Co/Hillcrest
9	CC-24-0.95-WB	Delta	Contra Costa	24	0.95	WB	Gateway Boulevard
10	SM-380-4.8-WB	West Bay	San Mateo	380	4.8	WB	Dead end near I-280
11	SM-92-13.8-EB	West Bay	San Mateo	92	13.8	EB	West end of San Mateo Bridge
12	SM-280-6.9-SB	West Bay	San Mateo	280	6.9	SB	Edgewood Off-ramp
13	ALA-880-20.8-NB	East Bay	Alameda	880	20.8	NB	Washington Off-ramp
14	ALA-580-17.7-WB	East Bay	Alameda	580	17.7	WB	El Charro On-ramp
15	ALA-680-7.48-SB	East Bay	Alameda	680	7.48	SB	Vargas Road Off-ramp
16	SCL-101-34.8-NB	South Bay	Santa Clara	101	34.8	NB	North of I-280/I-680
17	SCL-85-10.6-SB	South Bay	Santa Clara	85	10.6	SB	Oka Rd.
18	SCL-101-0.0-NB	South Bay	Santa Clara	101	0.0	NB	San Benito County Line

ASSESSMENT OF DRAIN INLET CLEAN-OUT OPERATIONS

As a part of this study, drain inlet clean-out operations were observed. These observations were conducted for the purpose of determining if additional BMPs or procedures should be included in current clean-out and decanting operations.

Location of Clean-Out Observations

This assessment was conducted in the Solano County Region of District 4 on July 30, 2003. Prior to conducting field observations of clean-out operations, Maintenance personnel were interviewed at the Fairfield yard located at 2019 West Texas Street. Following the staff interview, field observations of clean-out operations were conducted on southbound Interstate 680, just north of Marshview Road. The clean-out waste material was deposited at Decanting Site 5, located along Interstate 80, in the northwest quadrant of the Pena Adobe Road interchange.

Overview of Clean-Out Operations

Drain inlet clean-out operations are primarily conducted for the purpose of maintaining hydraulic capacity in the drainage system. Vactor™ trucks use high-pressure streams of water to loosen waste and make it possible to vacuum the slurry for disposal into a Vactor™ truck tank. Clean-out operations are illustrated in **Figure 1**.

After the tank is filled, the Vactor™ is driven to a nearby decanting site, where the contents are emptied into a decanting-pit. **Figure 2** illustrates the dumping of clean-out waste into a decanting-pit. After the contents have been emptied, high-pressure water jets inside the tank clear remaining material from inside the tank, as illustrated in **Figure 3**.

Typically several Vactor™ loads are emptied into a decanting-pit where the waste is allowed to air dry. Subsequently, the dried waste is removed from the decanting pit, using a loader or backhoe, and transported to a landfill for final disposal or reused as fill material.

Applicable recommended operational procedures and BMPs for clean-out operations, as presented in the Storm Water Quality Handbook Maintenance Staff Guide, May 2003 and Statewide Storm Water Quality Practice Guidelines, May 2003, include the following:

- A visual inspection of water drainage facilities shall be performed prior to cleaning. Caltrans operators are trained to visually inspect for petroleum products, odors, discoloration and other physical evidence of contamination.
- Use the minimum amount of water to clear drains and culverts.
- Keep water application equipment in good working order.
- Preserve existing vegetation.
- Do not stockpile sediment in or near the storm water drainage system or watercourses.

- Contain the water used and materials generated during drain and culvert cleaning and manage as liquid or solid waste.
- Liquid waste may be collected in a Vactor™ and transported back to the Maintenance facility or approved decanting area for proper disposal.
- Unpermitted non-storm water discharges are prohibited.

Figure 1. Drain Inlet Clean-Out Operations

Figure 2. Vactor™ Emptying/Decanting Operations

Figure 3. Final Vactor™ Tank Clearing

Clean-Out Assessment Observations

The following observations were made during the July 30, 2003 staff interview and field visit.

Maintenance Staff

Vactor™ operators receive specialized Vactor™ training and Hazardous Waste Operator Training. Additionally, all maintenance personnel are required to attend safety meetings held at a frequency of at least every 10 days. BMP training is included in these safety meetings. Maintenance personnel are trained on the BMPs presented in the Storm Water Quality Handbook Maintenance Staff Guide, May 2003 and Statewide Storm Water Quality Practice Guidelines, May 2003. Typical clean-out operations are conducted by a minimum of a two-person crew. One or more maintenance crew members are required to be a trained Vactor™ operator.

Clean-Out Operations

Clean-out operations are conducted using a Vactor™ truck accompanied by a water tanker truck. The water truck is used to refill the Vactor™ water storage tanks on-site, during maintenance operations. This allows the maintenance crew to work until the Vactor™ tank is full, without the need to leave the site to obtain additional water.

The drain inlet cleaning observed at the Interstate 680, near Marshview Road, location is in a rural setting. The drain inlet cleaned drains to the east through a box culvert, under the four-lane interstate, to a marsh/wetland area. The material removed from the drain inlet was comprised primarily of sediment and rocks of various sizes. The material appears to have made its way into

the Caltrans right-of-way through a culvert located under the frontage road to the west of Interstate 680.

The maintenance activities observed were consistent with appropriate operational guidance and BMPs presented in the Overview of Clean-Out Operations section above.

MONITORING METHODS

Monitoring of clean-out waste material was conducted at each of the17 District 4 decanting-pit sites. Monitoring was conducted in accordance with the Decanting Waste Characterization Sampling and Analysis Plan, August 2003 found in **Appendix B**. District 4 personnel were present during each of the decanting site monitoring field visits. Samples were collected and analyzed for the constituents listed in **Table 2**. All samples were collected using "clean techniques" following EPA SW-846 guidance for the collection of solid waste samples. Sampling personnel wore new clean, powder-free, gloves during sample collection, changing gloves as needed to reduce the potential for sample contamination (see **Figure 4**). Each decanting waste site was sampled at multiple, randomly selected locations. The waste was then combined at the analytical laboratory into a single composite sample to be analyzed for each site monitored. Only rigorously pre-cleaned sampling equipment and laboratory provided certified clean sample bottles came in contact with the sampled material. New pre-cleaned equipment was used at each monitoring site, so as not to cause cross-contamination between sites. Samples were preserved and transported to the analytical laboratory and analyses conducted according to EPA methods.

Table 2. Constituents Monitored, Analytical Methods, and Reporting Limits

Constituent	EPA Method	Reporting Limit	Units
Metals:			
Antimony	6020	0.1	mg/kg
Arsenic	6020	0.1	mg/kg
Barium	6020	0.25-1	mg/kg
Beryllium	6020	0.1-0.5	mg/kg
Cadmium	6020	0.1	mg/kg
Chromium	6020	0.1-1	mg/kg
Cobalt	6020	0.1-0.5	mg/kg
Copper	6020	0.1-0.5	mg/kg
Lead	6020	0.25-2	mg/kg
Mercury	7471A	0.02	mg/kg
Molybdenum	6020	0.1	mg/kg
Nickel	6020	0.1-0.5	mg/kg
Selenium	6020	0.1	mg/kg
Silver	6020	0.1	mg/kg
Thallium	6020	0.1-0.5	mg/kg
Vanadium	6020	0.1-0.25	mg/kg
Zinc	6020	0.5-5	mg/kg
Fuel Related:			
TPH Diesel	8015B	10-100	mg/kg
TPH Waste Oil	8015B	20-200	mg/kg
Benzene	SW 8015CM	0.005	mg/kg
Toluene	SW 8015CM	0.005	mg/kg
Ethylbenzene	SW 8015CM	0.005	mg/kg
Xylenes	SW 8015CM	0.005	mg/kg

In addition to sample collection and analysis, decanting site assessment was conducted at the 17 decanting sites. For each site, observations were recorded regarding site access and visibility from the highway, material stored, fencing, signage, existing BMPs, runoff characteristics, and any other pertinent visual observations.

Figure 4. Decanting-Pit Waste Sample Collection

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

This section presents a summary of the results of QA/QC analyses conducted. See **Appendix D** for a detailed description of QA/QC analyses conducted, results of QA/QC analyses, and data quality evaluation methods. The purpose of the QA/QC review is to identify any apparent QA/QC problems that may limit or bias reported data.

QA/QC Methods

QA/QC methods used to evaluate laboratory performance are shown below.

Initial Screening

The reported data are checked to identify any gross errors in the sampling, analysis, or reporting processes. Initial screening includes the checks on the following items:

- Laboratory reporting
- Completeness
- Holding times
- Detection limits

The initial screening typically involves additional communication with the laboratory and requests for amended laboratory reports.

QA/QC Data Evaluation

The QA/QC data evaluation assesses contamination, precision, and accuracy. Both a laboratory-initiated assessment (internal QA/QC) and a field-initiated assessment (external QA/QC) are performed. All QA/QC results are included in Appendix B.

Contamination Checks

Contamination of samples is assessed using method and field blanks. Blanks are prepared using reagent grade de-ionized water and tested using analytical procedures identical to those used for the environmental samples.

Accuracy Checks

Accuracy checks consist of measurements of the recovery of a “spike” of a known concentration, followed by calculation of percent recovery.

Laboratory control samples (LCS) and standard reference material (SRM) are batch checks for recovery of a known concentration of a standard solution used to assess the accuracy of the entire recovery process from preparation of the sample to analysis.

Matrix spike analysis involves the introduction of a known spike in the original "matrix" (sample solution), and is a measure of the accuracy of the recovery performance of the laboratory.

Surrogate matrix spikes are used as a check on the extraction process for organic compounds.

Precision Checks

Precision is the measurement of the difference between samples that are presupposed to be replicates (i.e., collected and analyzed in the same manner). The relative percent difference (RPD) is calculated as a measure of the difference between replicate samples.

Laboratory duplicates are samples split in the laboratory to measure the precision of the laboratory analysis.

Field duplicates are sampled one directly after the other in the field and submitted to the laboratory as separate samples.

Matrix spike duplicate (MSD) analysis checks the precision of the matrix spike (MS) recovery.

Laboratory control spike duplicate (LCSD) analysis checks the precision of the LCS recovery.

Field and laboratory duplicate samples must have a RPD less than the maximum allowable value (MAV) or have an absolute difference of one detection limit or less. LCS and MS replicates must have an RPD less than the MAV. Maximum allowable RPD values, out-of range results, and the resulting data qualifications are presented in **Appendix D**.

QA/QC Results

No significant QA/QC problems were encountered for this project. The following sub-sections present a summary of QA/QC results from the contract laboratories. All QA/QC results are reported in **Appendix D**.

Initial Screening

Laboratory data problems encountered during the initial screening process of analytical data are as follows:

The mercury result reported for Site 2 was observed to be significantly higher than the mercury results reported for all of the other sites. Therefore, the analytical laboratory was asked to review and confirmed the result. Re-analysis produced a similar result to that of the original, thereby confirming the original result.

Laboratory duplicate analysis for mercury, requested on the Site 13 sample, was not analyzed due to a laboratory error.

Contamination Checks

Chromium was detected in one of the two field blanks. The chromium field blank result was well below chromium levels detected in the decanting-pit waste samples. Therefore, no data qualification is required.

Accuracy

The standard reference material percent recovery results for chromium and vanadium were less than the lower acceptability limits. Therefore, the environmental samples associated with the standard reference material results were qualified as "low bias" (LB). The standard reference material percent recovery result for silver was greater than the upper acceptability limit. Therefore, the environmental samples associated with standard reference material result were qualified as "high bias" (HB).

Based on the QA/QC spike results, the appropriate environmental data points have been qualified and reported in **Appendix D**.

Precision

The calculated relative percent difference between the environmental results and laboratory duplicate results for TPH-Diesel Range Organics and TPH-Waste Oil at Site 13 were greater than the maximum allowable value RPD. Therefore, the environmental sample results were qualified as "estimated and not reproducible due to analytical variability" (EST-NR).

The calculated relative percent difference between the environmental results and field duplicate results for barium, copper, lead, mercury, molybdenum, and TPH-Diesel Range Organics at Site 10 were greater than the maximum allowable value RPD. Therefore, the environmental sample results were qualified as "estimated" (EST-FD).

The calculated relative percent difference between the matrix spike and matrix spike duplicate for lead at Site 16 was greater than the maximum allowable value RPD. Therefore, the environmental sample associated with the matrix spike duplicate result is qualified as "not reproducible due to matrix spike variability" (NRMS).

The appropriate environmental data points have been qualified and reported in **Appendix D**.

Holding Times Achieved

All analyses were conducted within the maximum allowable holding times specified by the analytical methods.

DECANTING WASTE MONITORING RESULTS

This section includes a presentation of the analytical laboratory results from the decanting-pit waste characterization monitoring.

Summary of Monitoring Results

A summary of the results is provided in **Table 4**. All results are shown in milligrams per kilogram (mg/kg). Detailed analytical results are provided in **Appendix B**.

Table 4. Decanting-Pit Waste Characterization Monitoring Results (mg/kg)

Constituent	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18
Antimony	0.654	3.08	0.582	0.547	0.709	0.821	0.81	4.49	1.99	3.48	0.58	2.5	0.997	0.916	1.82	1.76	0.887
Arsenic	2.02	5.97	3.07	4.19	7.1	9.31	2.15	3.7	2.9	1.97	2.74	2.66	5.28	4.32	2.14	2.94	3.16
Barium	117	180	153	196	381	582	132	210	161	315	209	147	272	223	136	184	227
Beryllium	0.251	0.286	0.211	0.277	0.285	0.362	0.138	0.235	0.168	0.127	0.351	<0.5	0.314	<0.5	0.225	0.199	0.396
Cadmium	0.273	0.603	0.303	0.247	0.133	0.184	0.337	1.64	0.717	1.01	0.444	0.874	0.794	0.589	0.446	0.97	0.354
Chromium	47.5	56.2	66.8	67.3	29.2	28.1	39.8	43	58.9	57.3	144	77.3	37.6	57.8	51.6	78.1	35.4
Cobalt	16.3	17.4	9.87	13.7	20.2	30.6	22.4	9.58	10.1	10.9	25.6	11.2	10.3	5.64	7.35	7.78	5.29
Copper	23.9	22.9	25.5	27	34.4	41	53.8	72.9	94.1	71.5	32.3	52.5	57.9	24.2	19.2	26.5	21.2
Lead	180	56.3	69.5	65	16.1	16.6	29.2	470	148	54.1	48.9	98	269	407	218	611	82.1
Mercury	0.0787	3.96	0.076	0.057	0.021	0.031	0.146	0.188	0.063	0.044	0.042	0.066	0.03	0.064	0.036	0.059	0.045
Molybdenum	1.87	0.64	1.12	0.722	0.698	1.6	3.17	3.27	2.7	2.72	0.933	2.68	1.52	1.67	2.25	1.79	0.954
Nickel	31.7	406	89.7	105	23.5	31.7	23.7	28.3	30.4	52.7	155	43.5	27.5	32.9	46.8	70.3	21.3
Selenium	<0.1	0.209	<0.1	0.179	0.262	0.356	0.1368	0.284	0.205	0.14	0.474	0.287	0.213	0.321	1.08	0.169	0.278
Silver	<0.1	0.171	<0.1	<0.1	<0.1	<0.1	<0.1	0.219	0.1	0.184	<0.1	0.102	<0.1	<0.1	0.123	<0.1	<0.1
Thallium	0.144	0.226	0.121	<0.25	<0.25	<0.25	<0.5	<0.25	<0.5	<0.25	<0.1	<0.25	<0.5	<0.1	<0.1	<0.1	0.149
Vanadium	68.3	43	63.4	60.1	86.3	95.9	59.1	48.6	51.7	63.2	60.9	45.8	62.1	54.3	49.3	56.2	59.6
Zinc	93.2	498	148	156	51.2	53	105	408	406	268	476	614	137	156	316	170	90.2
TPH-waste oil	460	800	620	<200	<20	<20	870	1100	1000	1500	500	530	1000	400	800	620	530
TPH-Diesel	81	<50	200	180	<10	<10	220	450	310	110	60	110	150	51	280	82	<50
Benzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Toluene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.12	0.03	<0.005	0.0076	<0.005	<0.005	<0.005	<0.005	0.013	0.025	0.01
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.045	<0.005	<0.005	0.0074	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Xylenes	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.085	<0.005	<0.005	0.08	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

DECANTING SITE ASSESSMENT

As described previously, visual site assessments were conducted at each of the 17 decanting-pit site. Observations made during site assessments are presented in this section. A spreadsheet showing a detailed, site-by-site summary is provided in **Appendix F**.

General Observations

The following general observations were made during decanting-pit site assessments:

1. All of the decanting-pit sites currently in use are located in areas that are easily and safely accessible by maintenance crews.

2. The majority of the decanting-pit sites are not readily visible by the public. The sites that are used only for decanting, and not as temporary storage sites, are typically difficult to spot from roadways. Decanting-pits are often hidden by low growing vegetation.

3. Decanting sites that are also used as temporary storage sites are typically more visible to the public because material is sometimes stored in piles as high as six to eight feet. Sites in pubic view with no fencing or gates appear to attract occasional private citizen dumping of various materials from vehicle batteries and motor oil to furniture and construction waste. Several sites are fenced and gated with no public access.

4. Most of the decanting-pit sites are multi-purpose, or combination, sites. In other words, most of the 17 sites are also used as temporary material storage sites. However, the material storage area is different than the decanting pit area. The most commonly observed stored materials include sweeper waste and highway grindings. In addition, slide material, base-rock, channel cleaning material, sand, and wood chips were present at some sites. Only 3 of the 17 sites were used exclusively for the decanting of drain-inlet cleaning waste.

5. There is no standard decanting-pit configuration. The typical configuration is a rectangular bermed pit (see **Figure 5**). The pits are typically excavation within the pit with berms that are approximately two-foot high. Other configurations include no internal excavation, berms on only three sites, excavated pits with no berms, and half moon shaped berms with no excavation.

6. All of the sites had relatively small amounts of waste material in them (only a few Vactor™ loads). The exact volume of waste material was difficult to estimate, primarily because the majority of the waste material deposited is in liquid form, which spreads out over the decanting-pit floor and evaporates. Typically, each Vactor™ load deposits approximately a couple cubic feet of solid waste after evaporation and infiltration. All the decanting-pits appeared to be well maintained, without an excess build-up of waste material.

7. All of the decanting-pits, regardless of configuration, were of adequate size to contain the deposited waste material. No decanting pits were observed to be near capacity, or in any way configured to allow decanting waste to spill from the designated decanting-pit area.

8. Some of the sites have driveway surfaces of asphalt or compacted highway grindings leading to the decanting-pit. However, the majority of sites have simple dirt driveways.

9. Because BMPs are not typically put in place until the start of the rainy season (October 15th), some sites did not have any physical BMPs in place. However, many sites had evidence of BMPs remaining from the previous rainy season. Most of the observed BMPs were runoff and downstream drain inlet protection, such as fiber rolls and silt fencing.

Figure 5. Typical Decanting-Pit Configuration (Site 6)

Decanting-Pit Site Specific Assessment

Detailed results of decanting-pit site assessments are presented in Appendix F and summarized below with specific recommendations. The observations presented below are intended to be specific to decanting-pit sites. In a separate effort, temporary storage sites are assessed in detail with regard to material storage methods, site configurations, and BMPs. Decanting-pit sites that are also used as temporary storage sites are included in this detailed assessment (see *Temporary Storage Site Assessment*, November 2003).

Site 1 (SON-101-3.66-SB)

This is a good site because it is located in a secured area at the Petaluma Maintenance Yard out of public view and secure from public access.

Site 2 (SON-116-6.15-WB)

Because this site is located on a designated scenic highway adjacent to the Russian River, the site could be improved by making efforts to hide the site from public view, by moving the site to a less visible location, or by hiding the site behind large vegetated berm.

Site 3 (SOL-80-41.2-WB)

This site is well hidden from public view, has easy and safe access, and receives adequate sunlight. However, the site is located in close proximity to a wetland area (less than 100 feet), which could be of potential concern.

Site 4 (SOL-80-32.6-EB)

This site is well hidden from public view, with easy and safe access, and receives plenty of sunlight.

Site 5 (SOL-80-23.9-WB)

This site has a compacted highway grindings driveway, has easy and safe access, and receives adequate sunlight. However, the site is highly visible from the Pena Adobe Road onramp, which has attracted private citizen dumping of material such as building materials, used motor oil, and a dog carcass. This site would benefit from a barrier or fencing that would restrict public access as well as "No Dumping" signage.

Site 6 (SOL-12-3.2-EB)

This is an ideal decanting-pit site. The site is located out of public view, has an asphalt driveway, and receives adequate sunlight.

Site 7 (SOL-12-17.5-EB)

This site is not currently used for clean-out waste decanting.

Site 8 (CC-4-30.0-EB)

This site is located out of public view and receives plenty of sunlight. Access to this site is not ideal since the site is located in the Highway 4 median. Access required exiting onto an unpaved surface from the fast lane. Additionally, leaving the site requires merging into the fast lane.

Site 9 (CC-24-0.95-WB)

This site is in an ideal location in that it is located behind a large bermed, paved, and gated area out of public view. Additionally, this is the only site that has a "Vactor™ Clean-Out Only" sign that likely serves to help prevent improper dumping. However, the decanting-pit does not receive adequate sunlight and is not bermed to prevent run-on. Relocation and reconfiguration to move the decanting pit away from the shade trees and with berms for run-on prevention would substantially improve this site.

Site 10 (SM-380-4.8-WB)

This site is out of public view. However, the configuration of the pit is not ideal. The pit is excavated out of a mound, with a large steep wall that will likely erode into the pit. Additionally, the site is shaded from the sun at times.

Site 11 (SM-92-13.8-EB)

This site is in a location that is out of public view, with easy and safe access, and receives adequate sunlight.

Site 12 (ALA-880-6.9-SB)

This site is located behind a locked gate, out of public view, with easy and safe access, and in an area that receives adequate sunlight. However, the decanting-pit is configured with steep banks that will likely erode into the pit.

Site 13 (ALA-880-20.8-NB)

This site is in a location that is out of public view, with easy and safe access, and a paved driveway. This site is currently configured with concrete traffic dividers on three sides. Run-on protection would be improved by replacing the concrete dividers with berms, or by adding berms in addition to the dividers. Additionally, this decanting-pit was observed to have some standing water, possibly due to a recent load of decanting waste and the pit being in a location that is shaded from the sun certain parts of the day.

Site 14 (ALA-580-17.7-WB)

This site is in a location with easy and safe access. However, the site is located in the public view. This site has a unique configuration, made up of a large half moon shaped berm with a silt fence. This site may benefit from the addition of run-on prevention measures.

Site 15 (ALA-680-7.48-SB)

This is an ideal site, configured with a bermed pit that has an asphalt driveway. This site has easy and safe access and has silt fence downstream drain inlet protection.

Site 16 (SCL-101-34.8-NB)

This decanting-pit is located in a large multi-use site. The decanting-pit was observed to have a significant amount of standing water, likely due to a recent load of waste and the fact that the pit receives shade from the highway interchange above. This site may benefit from having the decanting-pit relocated to a location with more direct sunlight.

Site 17 (SCL-85-10.6-SB)

This site is in location behind a locked gate and away from public view. The decanting-pit has a driveway of compacted highway grindings. The pit was observed to be muddy due to shade from adjacent trees. This site would benefit from some tree pruning or slight pit relocation.

Site 18 (SCL-101-0.0-NB)

This site is in a location behind a locked gate and away from public view and the decanting-pit receives adequate sunlight. With a little work on the berms at this site, to improve run-on protection, this will be an ideal site.

Summary of Observations

To summarize the observations presented above, all of the sites are located in areas with safe easy access; most of the sites are also used as temporary storage sites for materials other than clean-out waste; not all sites receive adequate sunlight for waste drying; and some sites were not adequately bermed or constructed to prevent run-on.

DATA OBSERVATIONS AND CONCLUSIONS

Summary statistics and data observations and conclusions regarding drain inlet cleaning decanting waste results are presented in this section.

Waste Characteristics

The summary statistics for characterizing the decanted waste are shown in **Table 5**, including percent detected, mean, maximum and minimum results. The percent detected shown is the percentage of the 17 sites monitored that had a reported result above the analytical detection limit. The mean is the average of the results from all 17 of the sites monitored. For several of the constituents (benzene, ethylbenzene, and xylenes) sufficient detected data were not available to calculate a mean value. The Caltrans Data Analysis tool (DAT) was used to generate summary statistics for characterizing the decanting waste. The DAT uses a regression on order statistics (ROS) to provide a method to estimate summary statistics for datasets that have some concentrations reported below the laboratory reporting limit ("non-detects"). The methodology, based on methods published by USGS, develops order statistics (probability of occurrence) based on the entire dataset and performs a regression of the detected concentrations against the order statistics. Summary statistics (mean, standard deviation, etc.) can be estimated based on the regression line.

The minimum and maximum results shown in **Table 4** indicate the lowest and highest results, respectively, that were reported for the sites.

Comparison of Results to Regulatory Limits

Also shown in **Table 5** are the California Code of Regulations (CCR) Title 22 Total Threshold Concentration (TTLC) values. Theses values indicate levels at which specific constituents are considered to be hazardous.

A review of **Table 5** shows that none of the results from the drain inlet waste characterization monitoring effort met or exceeded the CCR Title 22 values. This is evident when comparing the maximum reported results to the CCR Title 22 values. All reported values were below Title 22 values for hazardous waste. Therefore, none of the decanting waste sampled is considered hazardous waste.

To further clarify the issue, frequency distribution plots were produced for each constituent that had adequate results reported above analytical detection limits (see **Appendix E**). Plots were not produced for constituents that did not have 20 percent or greater detected data. Benzene, ethylbenzene, and xylenes did not have adequate detected data available to produce the plots. Included on these plots is the appropriate CCR Title 22 value. The plots show that for every constituent monitored, with the exception of lead, that the waste will be below the CCR Title 22 criteria more than 99.99 percent of the time. Similarly, lead levels in the decanted waste will be below the CCR Title 22 criterion 95 percent of the time.

Table 5. Decanting-Pit Waste Characterization Results Summary (17 Sites Sampled)

Constituent	Percent Detected	Mean (mg/kg)	Minimum Result (mg/kg)	Maximum Result (mg/kg)	CCR Title 22 Value (mg/kg)	Results Below CCR Title 22 Value
Antimony	100	1.57	0.547	4.49	500	100%
Arsenic	100	3.86	1.97	9.31	500	100%
Barium	100	225	117	582	10,000	100%
Beryllium	88	0.254	<0.5	0.396	75	100%
Cadmium	100	0.583	0.133	1.64	100	100%
Chromium	100	57.4	28.1	144	2,500	100%
Cobalt	100	13.8	5.29	30.6	8,000	100%
Copper	100	41.2	19.2	94.1	2,500	100%
Lead	100	167	16.1	611	1,000	100%
Mercury	100	0.295	0.021	3.96	20	100%
Molybdenum	100	1.78	0.64	3.27	3,500	100%
Nickel	100	71.8	21.3	406	2,000	100%
Selenium	88	0.280	<0.1	1.08	100	100%
Silver	35	0.084	<0.1	0.219	500	100%
Thallium	24	0.121	<0.1	0.226	700	100%
Vanadium	100	60.5	43	95.9	2,400	100%
Zinc	100	244	51.2	614	5,000	100%
TPH-waste oil	82	683	<20	1500	N/A	N/A
TPH Diesel	77	141	<10	450	N/A	N/A
Benzene	0	*	<0.005	<0.005	N/A	N/A
Toluene	35	0.013	<0.005	0.12	N/A	N/A
Ethylbenzene	12	*	<0.005	0.045	N/A	N/A
Xylenes	12	*	<0.005	0.085	N/A	N/A

* Insufficient detected data available to calculate a mean.

RECOMMENDATIONS

Recommendations regarding drain inlet cleaning operation, decanting-pit sites, and waste management are provided in this section. Recommendations regarding temporary storage site including operations, site configurations, BMPs, and waste management are presented in a separate report (*Temporary Storage Site Assessment*, November 2003).

Operational Recommendations

Assessment of clean-out activities revealed that maintenance personnel are well trained, on Vactor™ equipment operation, safety, and appropriate drain inlet cleaning BMPs. Clean-out and decanting activities appear to be conducted in a manner consistent with protocols presented in the Storm Water Quality Handbook Maintenance Staff Guide, May 2003 and Statewide Storm Water Quality Practice Guidelines, May 2003. Field observations indicated that these drain cleaning operations and subsequent handling of the slurry waste were conducted to minimize and prevent the discharge of pollutants to local waterways. Therefore, no changes in operational procedures or additional BMPs are recommended at this time. However, during the assessment of clean-out and decanting operations, observations were made regarding decanting site configuration. Individual decanting site recommendations are presented in the Decanting Site Assessment section of this report.

In summary, it is recommended that maintenance personnel continue to receive training as a part the safety meetings held at a minimum frequency of every 10 days. Regular BMP training should, at a minimum, include relevant information from the Storm Water Quality Maintenance Staff Guide, May 2003 and Statewide Storm Water Quality Practice Guidelines, May 2003. Additionally, maintenance personnel should be made aware of current regulatory activities that may impact maintenance activities.

Decanting-Pit Site Recommendations

Specific site recommendations are presented in the Site-Specific Observations section of this report. Recommendations for what would be considered the ideal decanting-pit placement and configuration are presented below. Although efforts should be made to follow these recommendations, there are many factors, such as availability of space in the Caltrans right-of-way, that may restrict the location and configuration of decanting-pit design and it is anticipated that every site will not meet the recommendations provided below.

1. Site Location. The ideal site is one that is located in an area that:
    - Has safe access and easy access for the Vactor™ truck to enter and exit; and
    - Is out of public view for the purpose of aesthetics (sites located out of public view will attract less illegal private citizen access and dumping).
2. Site Configuration.
    - Sites that must be located in an area that is in public view, and/or an area known to attract private citizen dumping should be gated to restrict public access. Additionally, “No Dumping” signs should be added in this type of an area.

- Asphalt or compacted highway grindings (or other suitable material) driveways are recommended for the purpose of reducing the potential for tracking material onto the roadway during wet conditions.

3. Decanting-Pit Location. Decanting-pits should be located in an area that:

   - Is at an elevation above the 100-year flood plain;
   - Does not have evidence of infiltration;
   - Is not in a location that is know to have groundwater or soil contamination;
   - Is not located near waterways or wetland areas;
   - Is not shaded by trees or structures (direct sunlight will accelerate evaporation of waste);
   - Has soils that provide adequate infiltration;
   - Has adequate area to allow decanting without spillage or overfilling

4. Decanting-Pit Configuration. The following decanting-pit configuration recommendations are made:

   - Although a standardized size or shape of pit is not recommended, decanting-pits should be bermed on all sites, or otherwise configured, to eliminate the potential for run-on or runoff. Berms should be configured in a stable manner so as to eliminate the potential for erosion.
   - For added runoff protection, the placement of staked fiber roll around the outside base of the bermed decanting-pit area would add runoff protection for newly constructed pits.
   - In addition, downstream drain inlet protection is recommended for additional runoff protection.

Waste Management Recommendations

Since the drain inlet cleaning waste characterization results presented in this report did not show the potential to exceed hazardous waste criteria, no additional waste management or tracking recommendations beyond Caltrans existing BMPs for waste management are provided at this time. Likewise, it is recommended that decanted drain inlet waste continue to be disposed of using the current practices of disposal at local landfills per current practices. Additionally, decanted waste material that is free of litter may be reused as highway fill material.

APPENDIX A

Site Maps

DISTRICT 4

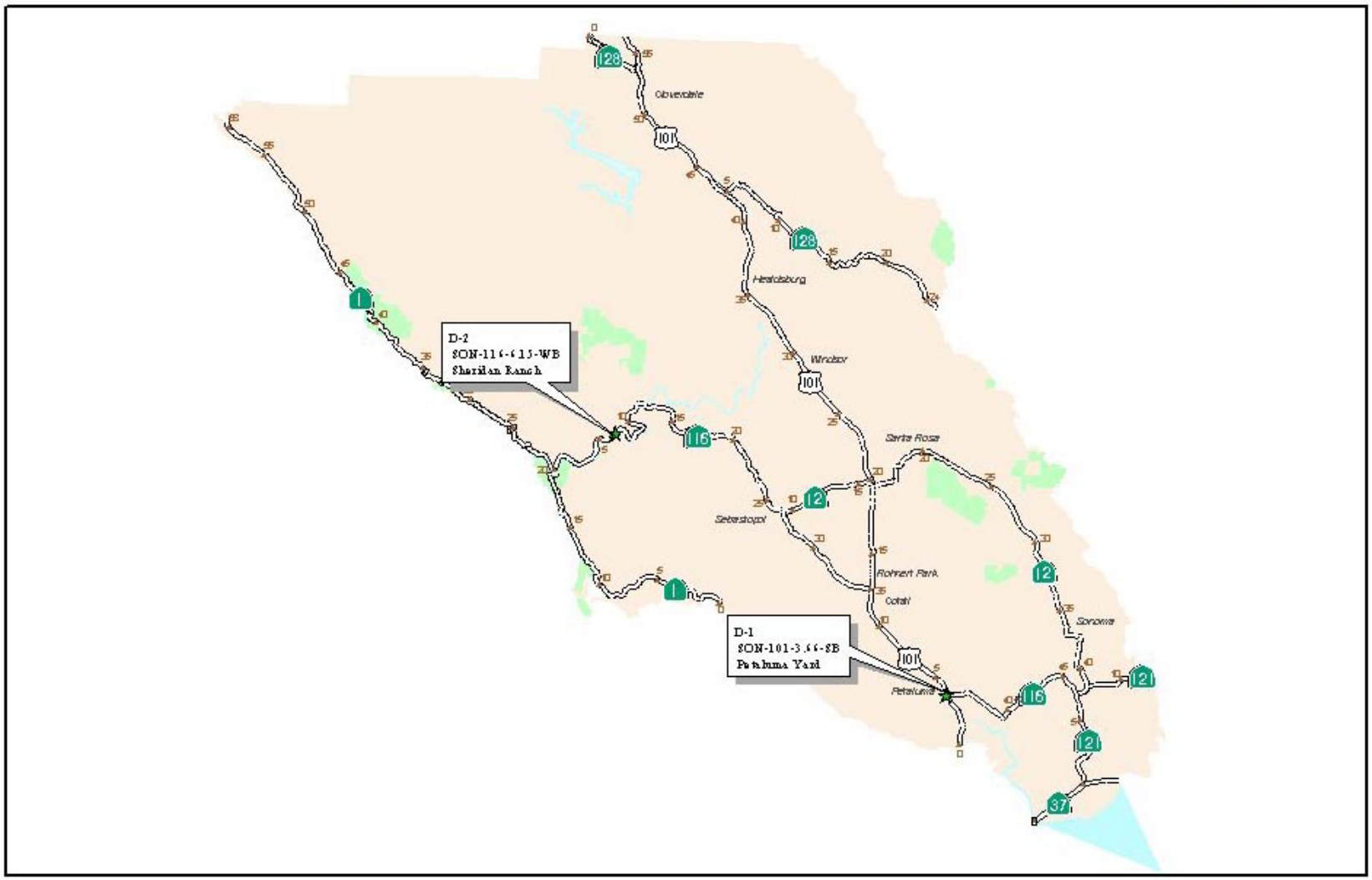
★ Decanting-PIT Site

● Temporary Storage Site

10 0 10 20 Miles

N

SONOMA COUNTY



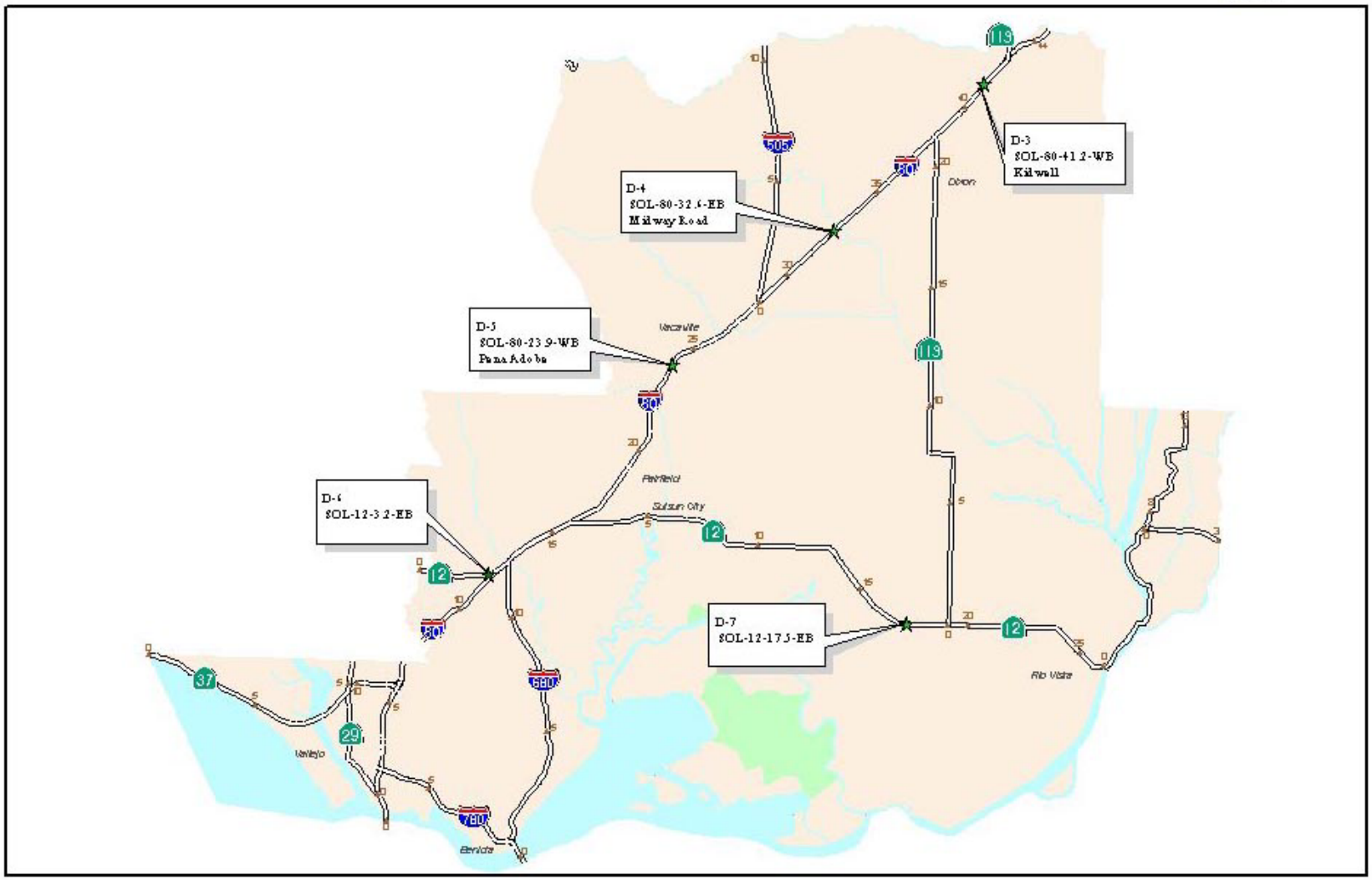
Decanting-PIT Site

Post Mile

4 0 4 8 Miles

N

SOLANO COUNTY



Decanting-PIT Site

Post Mile

4 0 4 8 Miles

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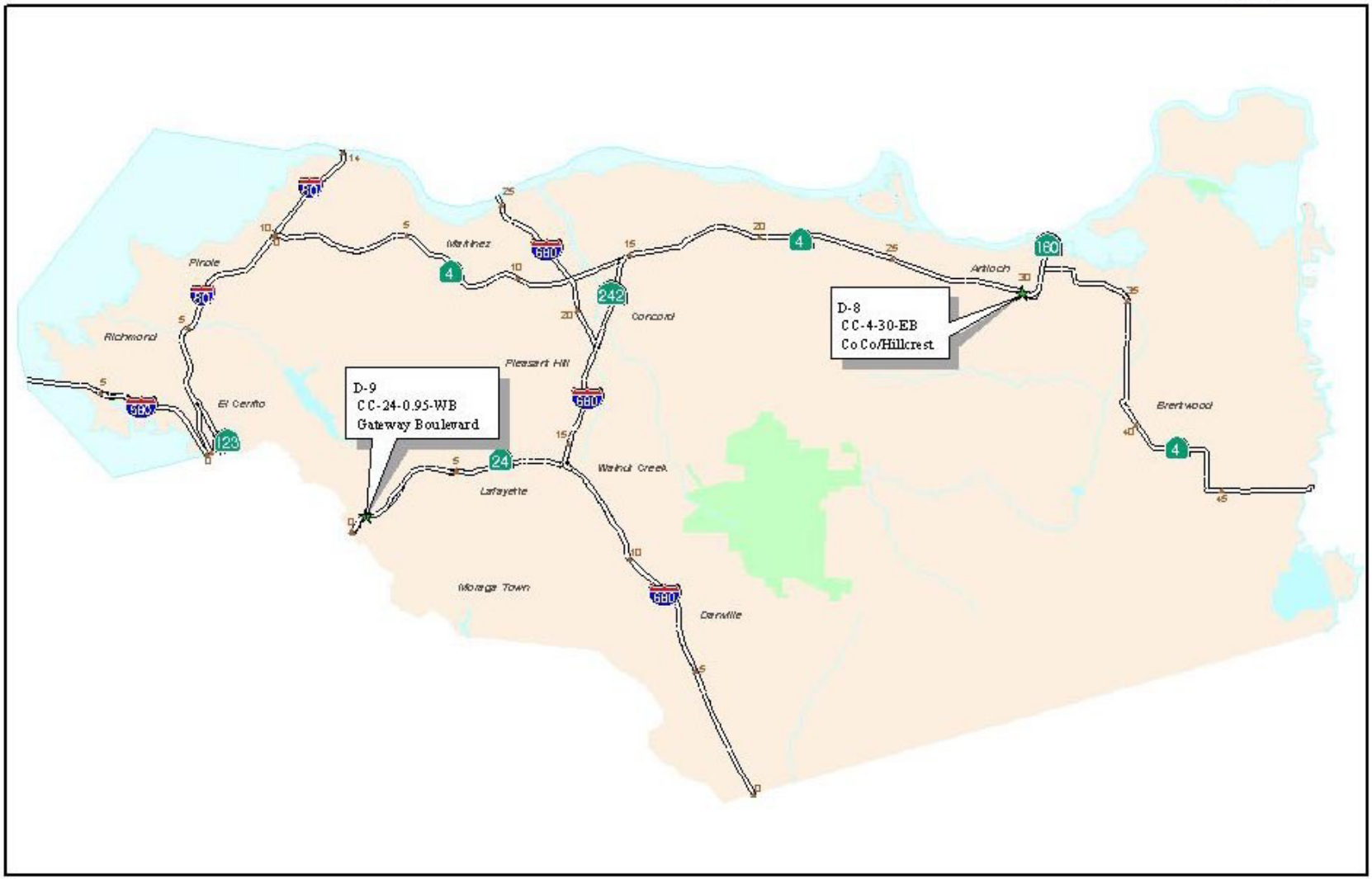
CONTRA COSTA COUNTY



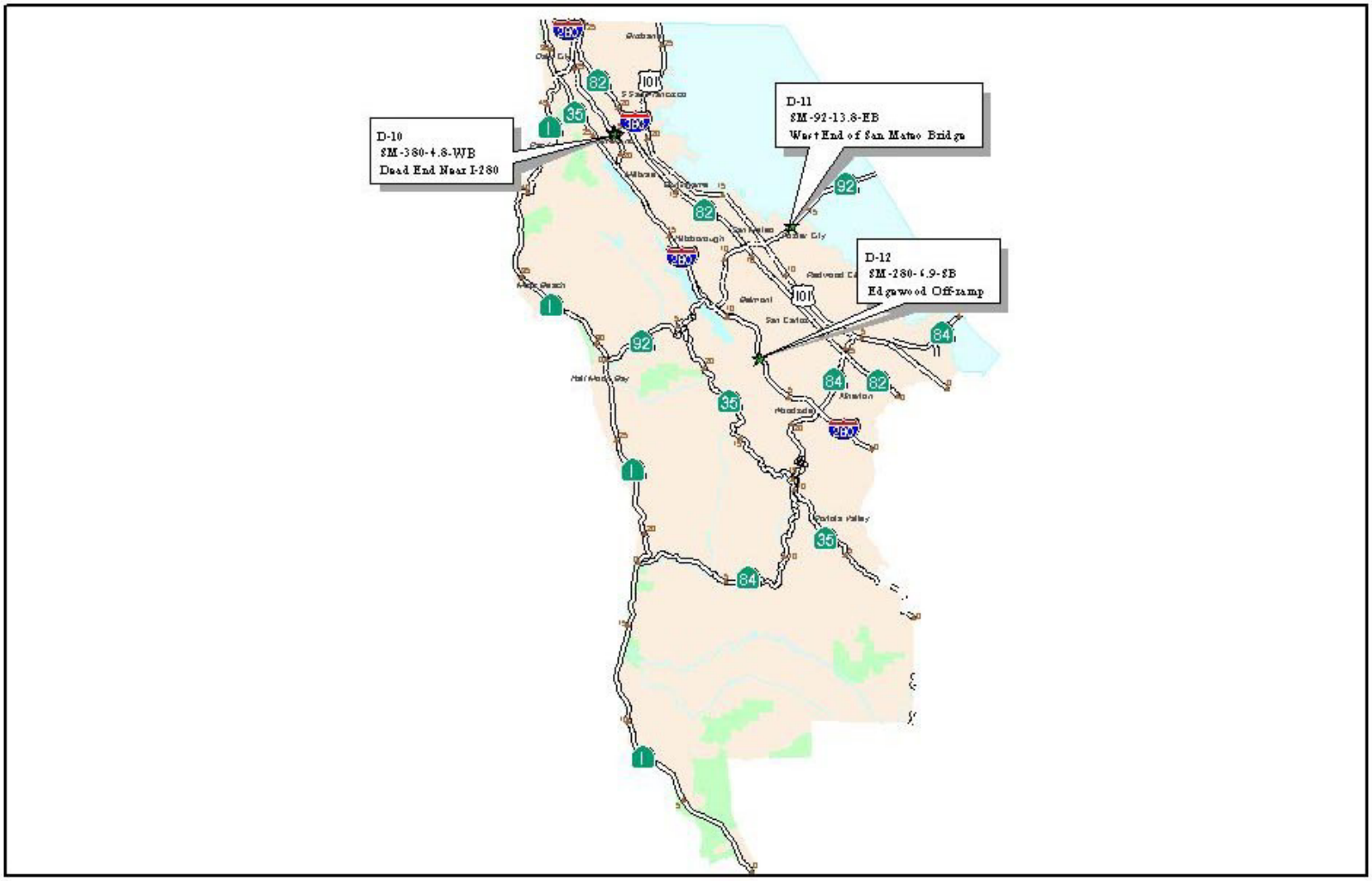
Decanting-PIT Site

Post Mile

4 0 4 8 Miles

N

SAN MATEO COUNTY



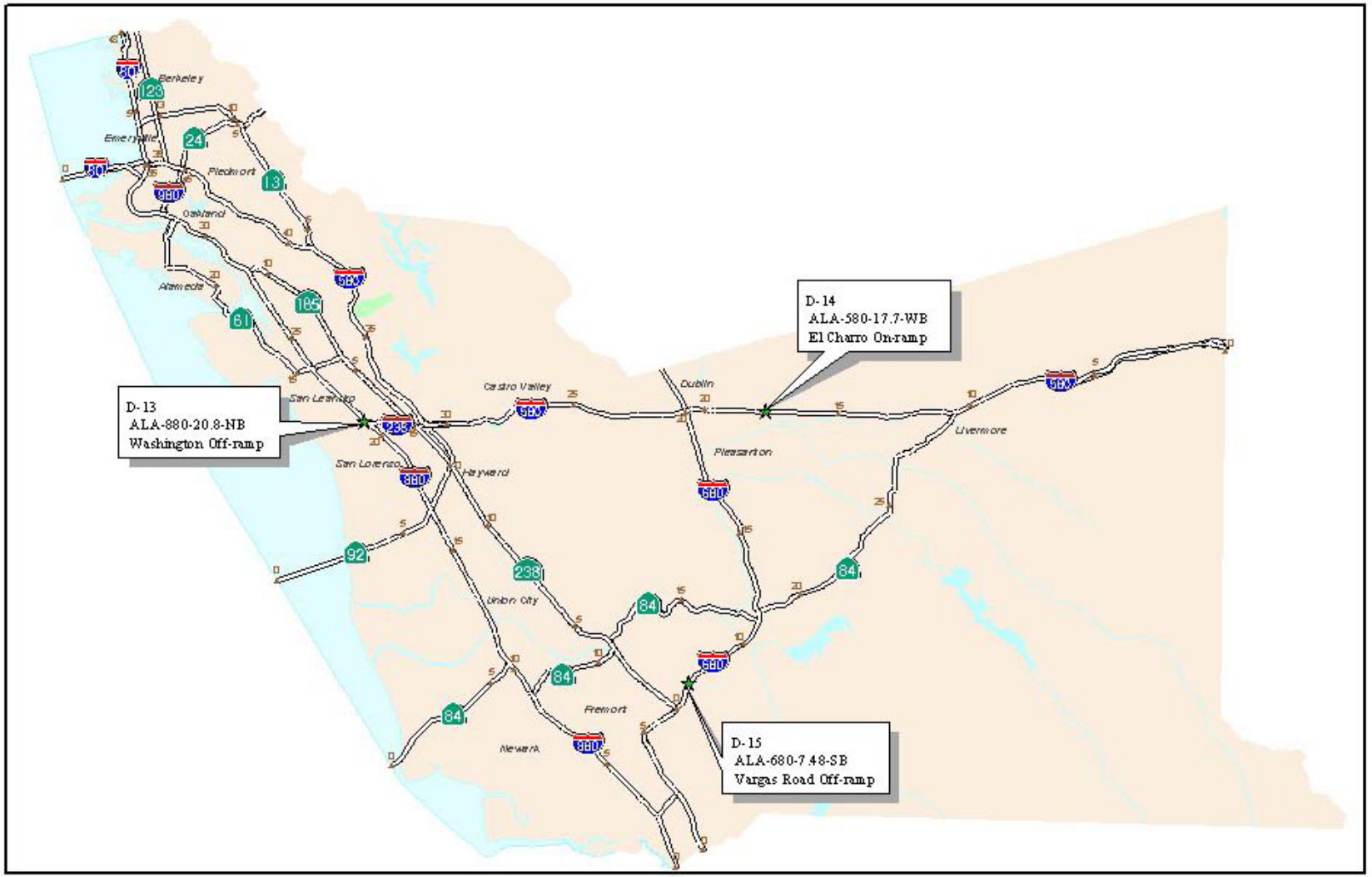
★ Decanting-PIT Site

▲ Post Mile

4 0 4 8 Miles

N

ALAMEDA COUNTY



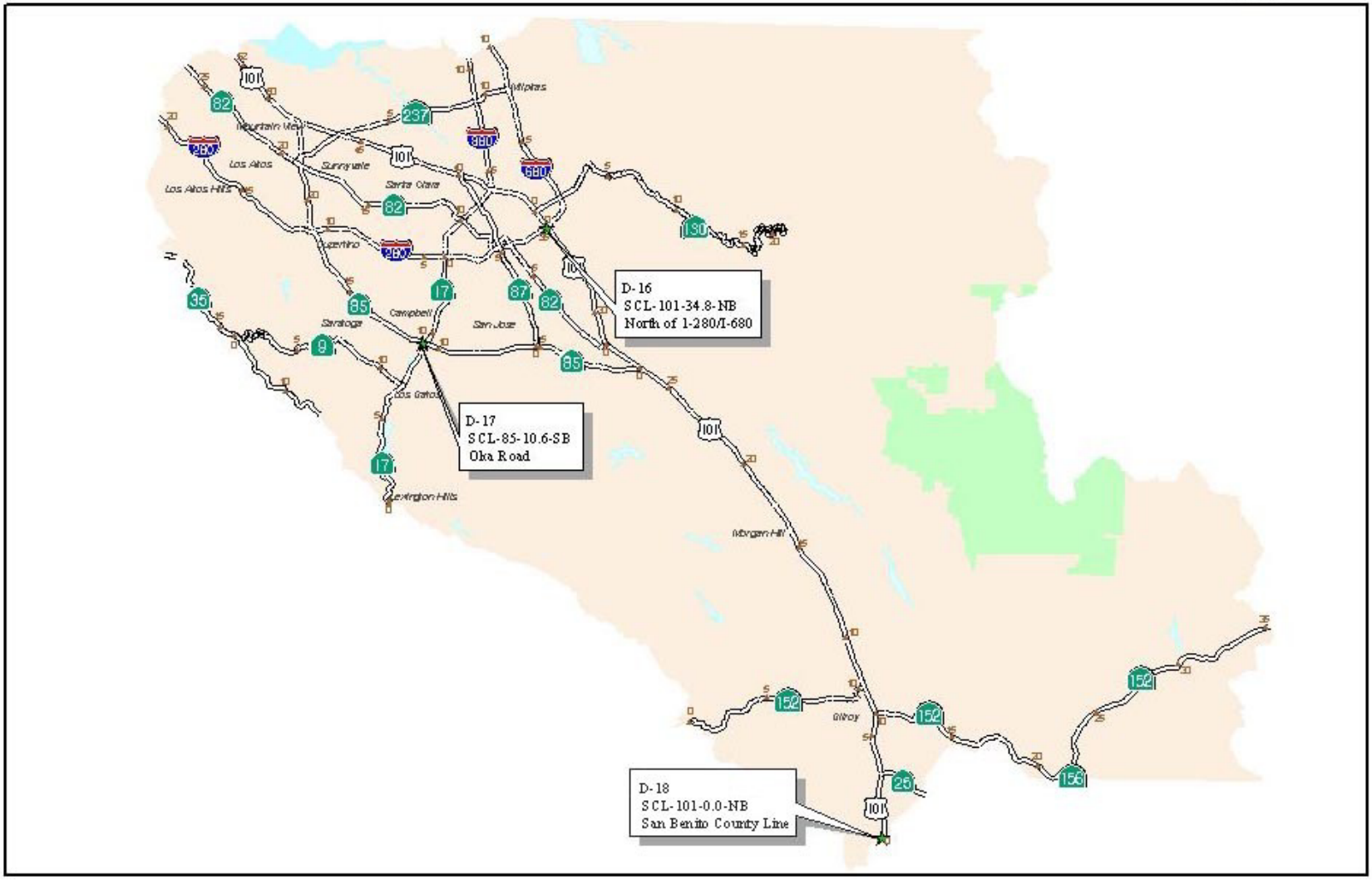
Decanting-PIT Site

Post Mile

4 0 4 8 Miles

N

SANTA CLARA COUNTY



Decanting-PIT Site

Post Mile

4 0 4 8 Miles

N

APPENDIX **B**

Decanting Waste Characterization Sampling & Analysis Plan

AUGUST 2003

Decanting Waste Characterization Sampling and Analysis Plan

CTSW-RT-03-068.51.43

California Department of Transportation

Table of Contents

Appendices

Decanting Waste Characterization Sampling and Analysis Plan

BACKGROUND AND PURPOSE

Caltrans conducts extensive cleaning of its drainage system throughout the State. Vactor™ trucks are often used to remove waste material from the drainage system. Full Vactor™ trucks dump the waste sludge at decanting sites, where the material is stored and allowed to dry. Dry waste sludge is ultimately removed from the decanting sites and taken to landfills for final disposal or reused as highway fill material for maintenance projects

Caltrans' current National Pollutant Discharge Elimination System (NPDES) Permit (Section I.1.c) requires the management of waste generated from drainage system cleaning. All waste from the drainage system that pose a threat to water quality must be removed and disposed of properly.

This Sampling and Analysis Plan describes that rationale, procedures, and methods for collecting and analyzing waste from 18 representative decanting sites throughout Caltrans District 4. The purpose of sample collection and analysis is to characterize the waste sludge.

DECANTING STORAGE SITES INCLUDED IN THIS STUDY

This study includes the 18 decanting sites currently in use throughout Caltrans District 4. A list of the decanting sites is provided in Table 1. Maps showing the locations of the decanting sites in District 4 are provided in Appendix A.

Table 1. Decanting Sites

Site No.	Site Code	Region	County	Route	Post Mile	Direc-tion	Location Notes
1	SON-101-3.66-SB	North Bay	Sonoma	101	3.66	SB	Petaluma Yard
2	SON-116-6.15-SB	North Bay	Sonoma	116	6.15	WB	
3	SOL-80-41.2-WB	North Bay	Solano	80	41.2	WB	
4	SOL-80-32.6-EB	North Bay	Solano	80	32.6	EB	
5	SOL-80-23.9-WB	North Bay	Solano	80	23.9	WB	
6	SOL-12-2.6-EB	North Bay	Solano	12	2.6	EB	
7	SOL-12-17.5-EB	North Bay	Solano	12	17.5	EB	
8	CC-4-30.0-EB	Delta	Contra Costa	4	30.0	EB	East of Hillcrest – median
9	CC-24-0.95-WB	Delta	Contra Costa	24	0.95	WB	Gateway
10	SM-380-4.8	West Bay	San Mateo	380	4.8		Dead end near 280
11	SM-92-13.8-EB	West Bay	San Mateo	92	13.8	EB	West end of bridge
12	SM-280-6.9-SB	West Bay	San Mateo	280	6.9	SB	Edgewood off ramp
13	ALA-880-20.8-NB	East Bay	Alameda	880	20.8	NB	Northbound Washington off ramp
14	ALA-580-17.7-WB	East Bay	Alameda	580	17.7	WB	Westbound El Charro on ramp
15	ALA-680-7.48-SB	East Bay	Alameda	680	7.48	SB	Southbound Vargas Road off ramp
16	SCL-101-34.8-NB	South Bay	Santa Clara	101	34.8	NB	Just north of 280/680
17	SCL-85-10.6-SB	South Bay	Santa Clara	85	10.6	SB	Near SCL 017 on Oka rd.
18	SCL-101-0.0-NB	South Bay	Santa Clara	101	0.0	NB	San Benito County Line

MONITORING SCHEDULE AND METHODS

Monitoring will be scheduled in coordination with appropriate District staff, to confirm that waste is present at each of the 18 District 4 decanting sites. It is anticipated that three to four decanting sites can be sampled in one day using a team of two people. The actual number of sampled per day will depend on travel distance between sites and traffic considerations.

Pre-Monitoring Event Activities

The following activities will be conducted approximately two weeks prior to the scheduled sampling:

- Verify that each site has waste present
- Verify the schedule of sites to be sampled and determine the total amount of samples that will be collected during each day of the two-week monitoring period.
- Confirm that a sampling crew, of at least two people, is available for each day of sampling, and that all have received appropriate training for the activity.
- Coordinate with the analytical laboratory, to notify them of the schedule and make arrangements for the delivery of clean sample containers, deionized (D.I.) water, and coolers. See Table 2 for required bottle types.
- Pre-clean stainless steel sampling trowels as described below.
- Gather field equipment as specified in the Field Equipment Checklist (Table 3).

The following activities shall be conducted approximately two days prior to the scheduled sampling:

- Contact District staff to ensure that waste is present at the sites scheduled for monitoring.
- Pre-label sample containers.
- Map out daily sampling site schedule.
- Coordinate with District staff to provide Caltrans escort to each of the sampling sites.

Table 2. Sample Bottle Requirements

Analysis	Bottle Type	Preservative
CAM 17 Metals	500mL Wide Mouth Glass	4° Celsius
TPH Diesel		
BTEX Compounds	60mL Wide Mouth Glass	4° Celsius

Table 3. Caltrans Decanting Waste Sampling Equipment Checklist

	Equipment
☐	500mL wide mouth glass jars for Metals and TPH samples
☐	60mL wide mouth glass jars for BTEX samples
☐	Bubble wrap for glass bottles
☐	Waterproof markers
☐	Sample Labels
☐	Powder free latex or nitrile gloves (at least one full box)
☐	Coolers and Ice
☐	Clean stainless steel sampling trowels
☐	Large Ziploc bags (for storage of clean gloves and other clean items)
☐	Cellular phone
☐	First Aid kit
☐	Digital camera
	Documentation
☐	This Sampling Plan
☐	Area map (Thomas Guide)
☐	Field log book
☐	Chain-of-custody forms
☐	Notebook for site sketches

Equipment Cleaning

All portions of the sampling equipment that come in contact with sample material must be cleaned prior to use for sample collection. Cleaning will be performed using phosphate-free laboratory detergent (e.g., Liquinox, Alchonox). Washed items shall be rinsed with D.I. water prior to the collection of each sample. When not in use, cleaned pieces should be stored in clean bags so as to reduce potential for contamination.

Sampling Event Activities

The following activities shall be conducted during waste sampling events.

Personal Protection

Ensure that all sampling personnel are wearing appropriate protective clothing, such as work boots, hard hat, safety vest, and gloves when collecting samples. If at any time during the sampling event, you suspect the waste sludge is unusually contaminated (e.g., due to odor, color, wastes, or other evidence) then halt work and notify Caltrans Hazardous Materials at (510) 286-4492.

Sample Locations

Each decanting site will be sampled at three randomly selected locations. The three individual samples will be submitted to the analytical laboratory, where they will be combined to provide a single composite sample for each decanting site. At each sampling site, random sampling locations shall be selected using a three-dimensional grid and a random numbers table as follows:

1. Using the random numbers table in Appendix B, select three numbers between 001 and 100. Random numbers may be selected by placing a finger on the random numbers table, without looking.
2. Use the grid shown in Figure 1 to locate the three randomly selected sampling locations in the horizontal plane. Since the waste to be sampled may be of irregular shape, it is possible that one or more of the selected locations on the grid will not contain material to sample. If this occurs, randomly select another location using the same process.
3. If the waste material to be sampled is of significant depth (say one foot or greater) each sample should be collected at a randomly selected depth as follows. Use the random numbers table again to select a sampling depth (from 1 to 10), with 1 at the top of waste material and 10 at the bottom, for each of the three randomly selected sampling locations. If the waste material is less than a foot in depth, the entire depth should be sampled.

Figure 1. Sampling Grid

1				5	6				10
41									50
51									60
91				95	96				100

Sample Collection

Samples shall be collected of deposited waste material only, excluding underlying native soil. The purpose of this is to characterize the chemical composition of the deposited waste material only.

A two person sampling team shall conduct sample collection using clean techniques as described below. Each sampling team member shall wear new, clean, powder-free latex or nitrile laboratory gloves during sample collection. Any time something not known to be clean is touched, gloves will be changed. One team member will use a pre-cleaned stainless steel sampling trowel to excavate and collect sample material from the randomly selected locations, while the second team member will be responsible for handling sample bottles. Particles greater than one inch in size should be avoided. A new clean scoop shall be used at each monitoring site.

Samples shall be collected only in the laboratory provided containers as listed in Table 2.

Clean Techniques

"Clean sampling" techniques are required to collect and handle samples in a way that results in neither contamination, loss, or change in the chemical form of the analytes of interest. Samples shall be collected using the protocols summarized below:

1. Samples will be collected only into new clean sample bottles provided by the analytical laboratory.
2. Sampling personnel will wear clean, powder-free, nitrile gloves at all times during sample collection.
3. Clean, powder-free nitrile gloves will be changed whenever something not known to be clean has been touched.
4. Clean techniques will be employed whenever handling sample bottles or equipment used for the collection of samples.

To reduce potential sample contamination, sample collection personnel will adhere to the following rules at all times while collecting or handling samples:

- No smoking.
- Never sample near a running vehicle. Do not park vehicles in immediate sample collection area (even non-running vehicles).
- Minimize the amount of time any sample container is left open.
- Do not set lids down where they may accumulate contaminants.
- To the greatest extent possible, prevent foreign material (blowing dust, leaves, etc.) from entering any open sample container.
- Never touch the inside surfaces of sample bottles, lids, even with gloved hands.
- Do not eat or drink during sample collection.

- Avoid breathing, sneezing or coughing in the direction of an open sample bottle.

Sample Labeling

Samples shall be labeled immediately after collection with the following information:

- Project Name (Caltrans Decanting Waste Characterization)
- Monitoring Site Number and Location (from Table 1). See Table 4 below for Field and Blank Duplicate sites and codes.
- Sample collection date and time.

The labels should be written with indelible ink to prevent smearing in the presence of moisture.

After labeling, the sample shall be immediately placed on ice in a cooler.

Field Quality Assurance/Quality Control

The following types of quality assurance/quality control analyses will be conducted during this study. See Table 4 for QA/QC schedule. Results of QA/QC analyses will be used for data quality evaluation.

Field Blanks

Field blank samples shall be collected for the purpose of checking field procedures and equipment for potential sample contamination. Field blanks shall be collected for each of the required analyses prior to normal sample collection, at the sites specified in Table 4. Field blanks shall be collected, using clean techniques, by pouring laboratory-provided blank water into the clean stainless steel sampling trowel, then into a clean sample bottle. The blank sample shall be placed on ice and delivered to the laboratory with normal samples.

Field Duplicates

Field duplicate samples will be submitted to the laboratory, and results used to assess variability attributed collection, handling, shipping, storage, and laboratory handling and analysis. Field duplicate samples shall be collected in close proximity to normal samples at sites specified in Table 4.

Laboratory Duplicates

Laboratory duplicates will be used to assess the precision of the analytical method and laboratory handling. No special sampling considerations are required, however, the request for laboratory duplicate analysis shall be made on the chain-of –custody form for sites specified in Table 4.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD analysis will be used to assess the accuracy and precision of the analytical methods in the sample matrix. No special sampling considerations are required, however, the request for MS/MSD analysis shall be made on the chain of custody form for the site specified in Table 4.

Table 4. QA/QC Schedule

Site Number	Site Code	Site Location	QA/QC
1	FB-SON-101-3.66-SB	North Bay – Sonoma County	Field Blank
8	FB-CC-4-30.0-EB	Delta – Contra Costa County	Field Blank
10	FD-SM-380-4.8	West Bay – San Mateo County	Field Duplicate
13	ALA-880-20.8-NB	East Bay – Alameda County	Laboratory Duplicate
16	SCL-101-34.8-NB	South Bay – Santa Clara	MS/MSD

Field Documentation

For each site sampled, complete the following paperwork:

- Sketch of the site, including location of decanting site, materials, and BMPs
- Sampling Observation form (Appendix C), including attached copies of digital photos
- Chain of Custody (COC) form (Appendix D). Identify on the COC form any unusual sampling conditions, deviations from this Sampling Plan, and reasons any sampling did not occur as planned.

Handling and Transport of Samples

The samples should be shipped to the laboratory, under Chain of Custody, on the day of sample collection. Notify the laboratory ahead of time so that they are prepared to accept the shipment. If it is not possible to transport the sample to the laboratory the day of sample collection, then ship as soon as possible the next working day, replacing ice as needed to ensure sample preservation.

Samples held pending transport to the laboratory should be kept in an ice chest or transferred to a refrigerator and maintained at a temperature of 4° C (39° F). All sediment samples shall be submitted with a completed Chain of Custody form to the County selected certified laboratory for analysis.

Shipping Information

Samples shall be shipped for next morning delivery the following address:

ToxScan
Attn: Doug Clark
42 Hangar Way
Watsonville, California
United States, 95076

Phone: 408-724-4522

LABORATORY ANALYSES AND QUALITY ASSURANCE

Sample Test Methods

Decanting waste samples collected during this study will be analyzed for the parameters listed in Table 5, in accordance with approved EPA test methods at the specified detection limits.

Table 5. Testing Parameters, EPA Testing Methods

Constituent	EPA Method	Reporting Limit	Units	Holding Time
Metals:				
Antimony	6010	1	µg/kg	6 months
Arsenic	6010	2	µg/kg	6 months
Barium	6010	2	µg/kg	6 months
Beryllium	6010	1	µg/kg	6 months
Cadmium	6010	1	µg/kg	6 months
Chromium	6010	1	µg/kg	6 months
Cobalt	6010	1	µg/kg	6 months
Copper	6010	1	µg/kg	6 months
Lead	6010	1	µg/kg	6 months
Mercury	7410	0.02	µg/kg	6 months
Molybdenum	6010	1	µg/kg	6 months
Nickel	6010	2	µg/kg	6 months
Selenium	6010	2	µg/kg	6 months
Silver	6010	1	µg/kg	6 months
Thallium	6010	1	µg/kg	6 months
Vanadium	6010	1	µg/kg	6 months
Zinc	6010	5	µg/kg	6 months
Fuel Related:				
TPH Diesel	8015	100	µg/kg	14 days
BTEX Compounds	8021	0.5	µg/kg	14 days

Data Review

The laboratory shall submit the sample results to the within 18 calendar days of receipt of the samples. Laboratory reports shall reviewed to verify that the samples were analyzed as requested and that proper QA/QC procedures were followed.

Quality Assurance and Quality Control

Quality Assurance and Quality Control (QA/QC) is achieved through accurate application of both field and laboratory measures. These measures include field documentation of sample collection according to approved procedures; collection of field duplicates, as discussed previously; and the use of a qualified, certified laboratory, which conducts its own internal QA/QC, as discussed below.

Laboratory QA/QC

The internal quality control conducted by the laboratory includes laboratory duplicates, matrix spikes, matrix spike duplicates, method blanks and laboratory control samples. QA/QC reports will be generated by the laboratory and delivered to the County along with the data reports.

Out-of-Range Data

Laboratory results shall be evaluated for out-of-range data. Sample results that appear out-of-range shall be verified with the laboratory. If the laboratory verifies the result, the determination will be made if a second digestion and analysis of the sample shall be requested. If the result of a second analysis is generally consistent with the original, the original result shall be accepted. If the result of the second sample digestion and analysis is generally inconsistent with the original, a third confirming sample digestion and analysis shall be requested. Two consistent results shall be deemed a confirmed result. If all results are inconsistent, the laboratory shall be contacted, and the capabilities of the laboratory for this assignment discussed.

Sample Holding by Laboratory

All samples for applicable inorganic analyses shall be held by the laboratory for a minimum of three months beyond the sample receipt date before they are discarded. All samples for organic analyses shall be held at the laboratory until analytical holding times have expired. All digested sample aliquots shall be held by the laboratory for a minimum of 30 days beyond their sample receipt date before they are discarded.

DATA ANALYSIS, INTERPRETATION, AND MANAGEMENT

Data Analysis

All laboratory data resulting from decanting waste sampling shall be analyzed statistically using an adaptation of the U.S. EPA's 1986 Test Methods for Evaluating Solid Waste, also known as SW-846. The SW-846 method is the California Department of Toxic Substances Control's accepted method for determining whether a solid waste is hazardous.

Data Report

Following sampling at all 18 decanting sites, a summary of the data analyses shall be presented in a technical memorandum, to include the following information, at a minimum:

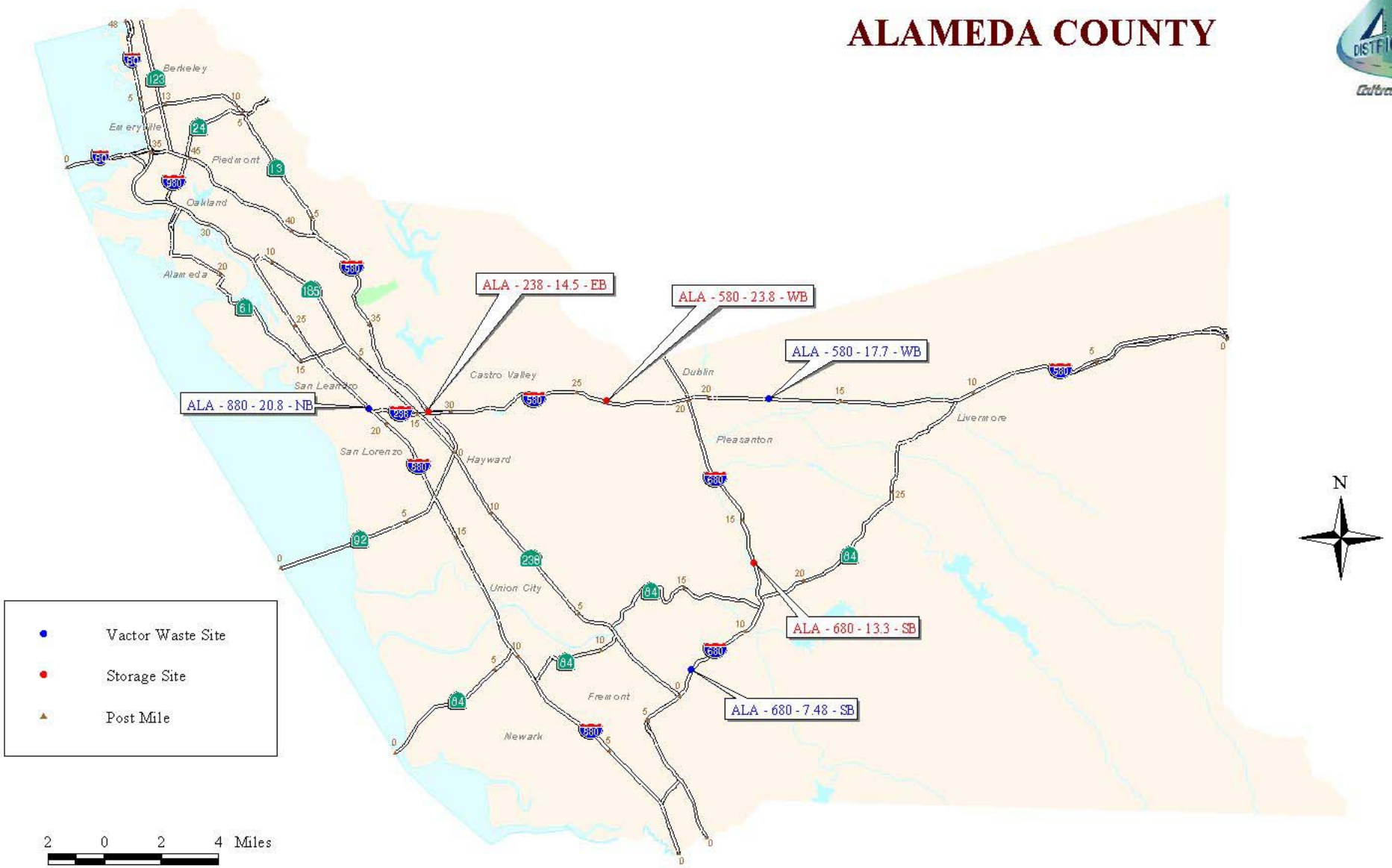
- List of sites that were monitored;
- Descriptive statistics, including the means and ranges of pollutant concentrations found in monitored sits;
- Confidence interval analyses;
- Determination of compliance with applicable waste disposal standards;
- Description of any unusual circumstances that occurred during sample collection; and
- Recommendations for management and disposal of waste.

APPENDIX **A**

Decanting Site Location Maps


SONOMA
NAPA
SOLANO
MARIN
CONTRA COSTA
ALAMEDA
SAN MATEO
SANTA CLARA
PACIFIC OCEAN
Vactor Waste Site
Storage Site
Post Mile
N
W
E
S
10 0 10 20 Miles

ALAMEDA COUNTY



CONTRA COSTA COUNTY

MARIN COUNTY

N

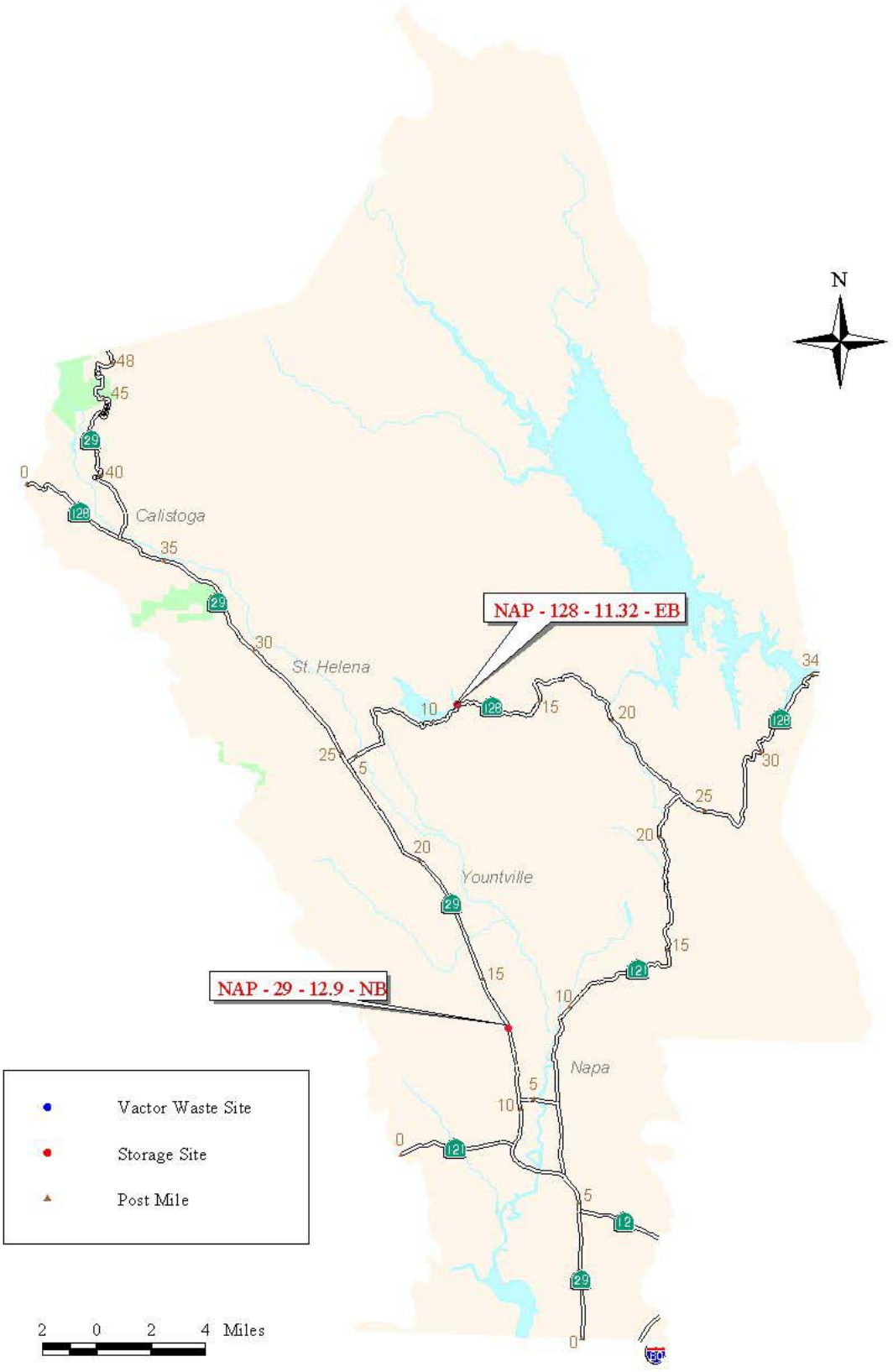
2 0 2 4 Miles

Vactor Waste Site

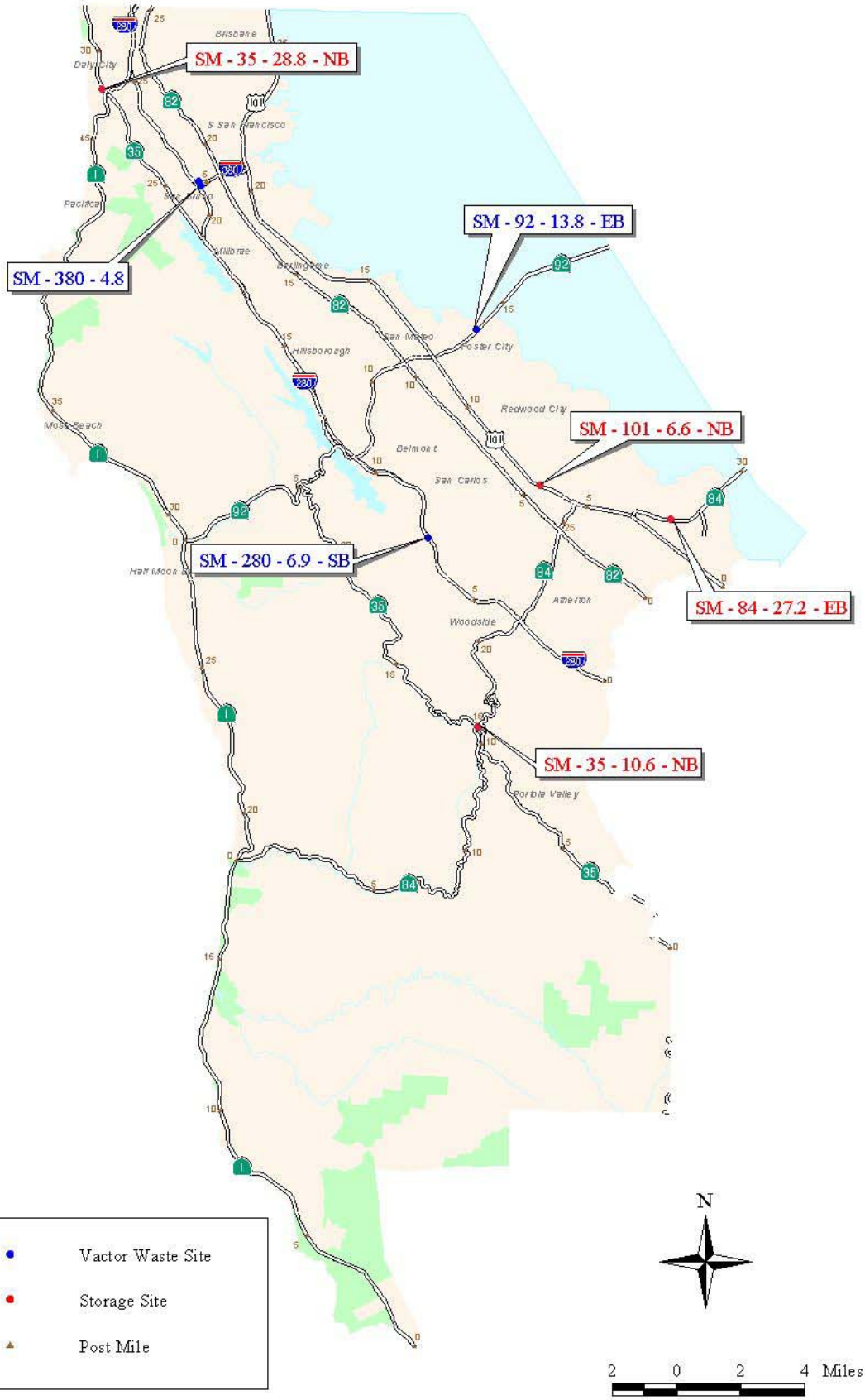
Storage Site

Post Mile

NAPA COUNTY


N
NAP - 128 - 11.32 - EB
NAP - 29 - 12.9 - NB
Calistoga
St. Helena
Yountville
Napa
Vactor Waste Site
Storage Site
Post Mile
2 0 2 4 Miles

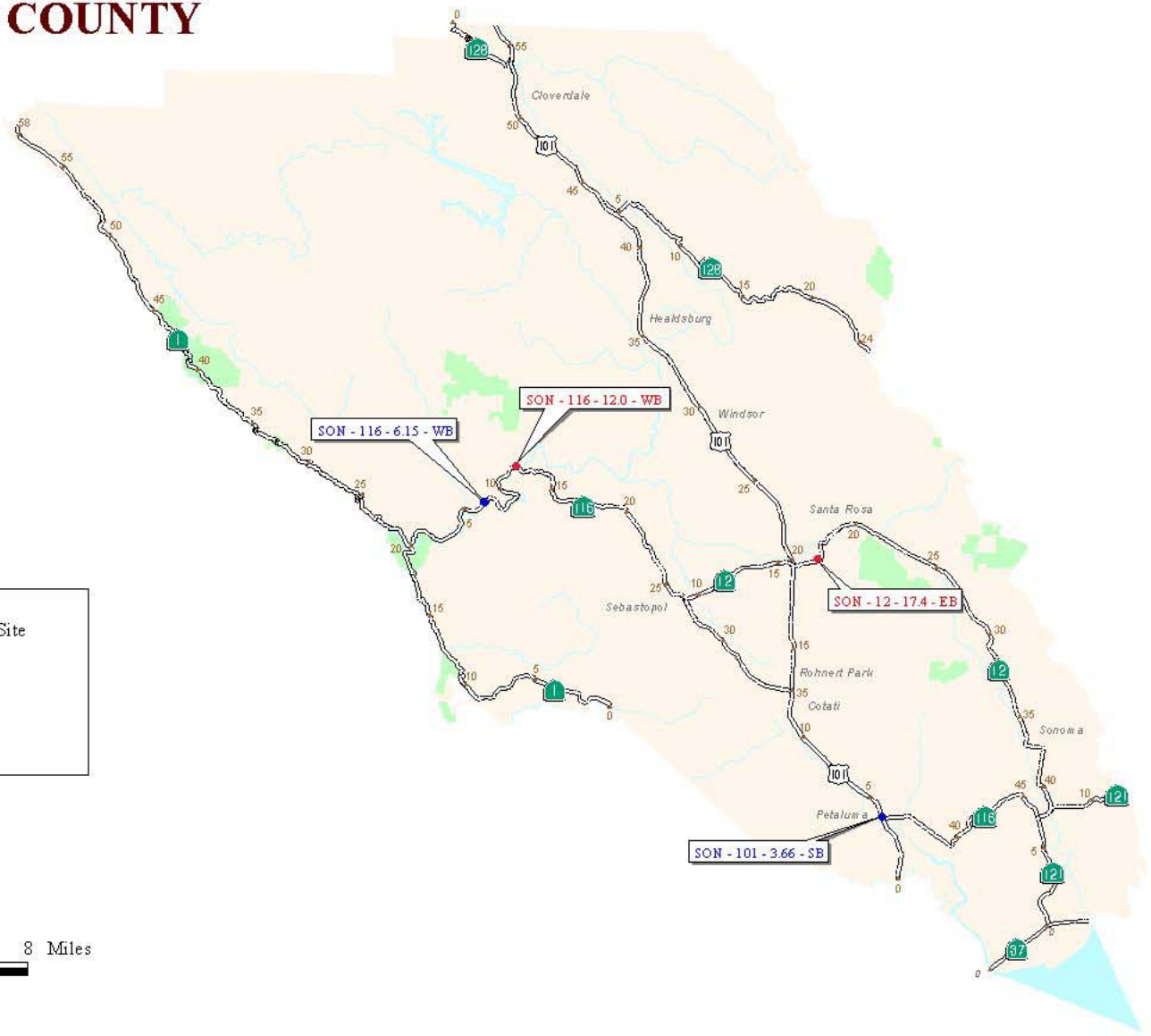
SAN MATEO COUNTY



SANTA CLARA COUNTY

SOLANO COUNTY

SONOMA COUNTY



Vactor Waste Site

Storage Site

Post Mile

N

4 0 4 8 Miles

APPENDIX **B**

Random Numbers Table

78	3	66	49	8	91	1	82	75	53	74	74	40	91	77	6	12	27	74
24	6	17	24	5	8	87	36	56	61	21	93	78	57	56	45	77	78	82
67	42	16	11	6	92	88	26	38	5	14	7	33	28	88	3	70	4	70
66	52	92	91	67	88	46	40	25	92	75	36	76	43	68	42	32	90	4
95	93	82	52	5	97	50	78	38	4	24	35	71	68	30	23	65	91	34
11	99	6	89	76	41	26	90	81	61	15	20	17	20	16	6	53	23	94
27	50	73	43	3	29	14	58	98	29	39	31	40	58	94	31	50	32	51
51	83	20	77	1	61	61	67	52	88	12	80	31	16	32	48	21	94	49
74	86	53	66	96	85	56	8	68	46	14	18	18	33	10	23	8	8	47
68	66	72	55	70	71	52	57	55	98	29	53	64	20	83	36	75	82	90
12	94	21	39	23	48	69	72	44	87	40	90	30	96	63	91	17	39	35
89	27	52	83	100	88	60	71	21	86	13	42	40	57	42	96	54	14	38
92	32	50	53	86	33	32	47	72	26	13	27	79	52	27	57	89	19	57
66	10	59	81	46	51	26	3	60	82	34	38	38	47	8	34	17	19	96
32	75	5	5	98	7	84	87	26	70	97	27	40	84	62	26	69	70	20
54	59	59	81	87	20	55	72	75	53	66	33	71	7	37	58	93	61	13
55	42	95	19	34	58	71	15	98	75	83	99	56	17	26	32	96	89	78
35	71	71	8	85	94	94	75	68	74	97	67	88	25	91	78	64	45	64
47	53	54	97	58	63	58	37	13	24	63	31	13	70	13	20	92	11	97
31	36	42	98	92	96	36	24	23	15	36	19	56	13	43	55	17	42	22
70	48	63	11	9	91	56	64	3	75	30	41	4	25	41	87	33	10	4
29	9	38	78	84	93	23	99	1	9	39	46	49	82	19	29	88	51	95
68	62	84	47	38	83	76	56	92	69	43	32	97	51	24	81	44	99	61
36	42	31	25	47	69	68	52	42	8	5	39	97	98	82	74	30	9	10
76	90	12	90	32	25	51	98	60	20	18	27	46	2	30	63	57	81	75
39	91	74	92	89	10	1	65	19	21	89	59	85	78	13	65	42	6	68
50	46	68	2	60	89	17	51	97	56	94	98	90	44	60	80	29	54	64
48	2	26	67	37	4	76	32	67	79	18	97	17	68	92	98	82	30	16
81	76	9	31	69	30	85	64	44	10	60	24	53	38	6	55	73	34	60
61	48	18	88	48	82	86	39	16	45	32	43	64	51	77	22	41	11	3
26	25	63	17	51	11	83	29	78	20	89	65	79	91	14	52	79	15	17
95	42	82	22	68	35	35	51	27	38	81	53	1	89	10	65	13	36	75
29	89	75	50	19	80	21	14	39	1	59	89	8	13	99	7	18	38	97
7	64	87	72	77	11	83	6	35	12	99	70	100	13	4	8	15	86	45
53	64	81	96	67	6	11	42	68	9	33	52	97	6	54	34	26	9	15
27	21	36	23	83	60	41	14	64	7	74	41	69	86	6	70	12	33	89
42	4	63	58	5	75	39	22	62	46	23	23	4	73	87	98	95	55	38
45	65	3	76	70	41	48	68	3	77	18	53	57	49	91	14	6	80	99
40	82	64	91	75	45	74	4	49	16	88	47	73	13	8	96	55	14	96
85	10	83	82	30	35	92	86	1	16	44	29	100	6	66	27	52	33	43
42	95	94	42	35	40	69	88	46	41	20	65	27	80	12	96	16	35	52
18	30	19	57	27	12	13	54	71	88	80	64	21	84	9	68	72	46	44
79	75	99	90	17	82	38	36	55	54	72	22	4	1	71	19	25	89	47
14	25	19	66	63	13	56	93	55	26	11	91	29	48	29	54	93	54	33
27	34	41	50	3	56	90	97	79	33	81	92	66	56	99	47	64	68	86
53	69	60	16	17	27	15	74	90	27	62	82	79	79	8	84	95	65	17
51	40	19	29	47	14	50	67	41	95	58	13	75	70	44	15	57	63	17
43	79	79	76	6	31	20	30	6	49	23	25	64	29	71	41	14	41	79
83	28	64	80	37	50	55	16	39	79	49	14	43	67	51	18	76	1	40
60	87	96	20	77	35	10	97	14	84	9	69	36	7	2	1	85	85	47
16	18	97	26	35	67	96	24	59	62	3	91	48	21	88	63	26	28	84
61	77	53	51	68	36	16	79	54	92	98	75	67	73	31	69	4	16	30
86	14	98	48	70	60	90	32	26	88	33	65	18	1	26	12	98	85	22
71	73	56	25	23	5	37	96	34	62	15	40	3	20	20	47	79	42	13
38	31	51	81	52	85	72	24	96	87	71	66	17	66	85	36	66	16	70
32	75	58	5	84	97	28	17	46	32	55	56	44	59	3	71	31	26	63

APPENDIX **C**

Field Log/Observation Form

DECANTING SITE SAMPLING
FIELD LOG/OBSERVATION FORM

Sampling Date: _____ Sampling Time: _____

Site Number: _____ Site Code: _____ Location: _____

Sampling Personnel: _____

Weather Conditions: _____

Check all that apply: ☐ Decanting Site ☐ Temporary Storage Site ☐ Signage
☐ Sweeper Waste ☐ Highway Grindings ☐ Fence/gate
☐ Rock ☐Other Materials: _____

Waste Characteristics (odor, color, oil, etc): _____

_____

Grid Locations Sampled (plane/depth): _____

Existing BMPs:

- ☐ Run-on prevention (ditch, berm, swale)
- ☐ Decanting location away from watercourses in area not prone to flooding
- ☐ Sediment control (silt fence, straw bale, fiber roll)
- ☐ Other: _____

Recommended BMPs or Site Improvements: _____

_____

_____

Comments: _____

_____

_____

_____

☐ Site Sketch Completed ☐ Photographs Taken

APPENDIX **D**

Chain of Custody Form

TOXSCAN CHAIN-OF-CUSTODY

PAGE ____OF ____

COMPANY NAME:	COMMENTS/SPECIAL INSTRUCTIONS:
ATTN:	
ADDRESS:	
PHONE:	
FAX:	
E-MAIL:	
PROJECT NAME:	SEND INVOICE TO:
PROJECT NUMBER:	P.O. / CONTRACT NO:

ANALYSIS(ES) REQUESTED

TOXSCAN INC.
42 Hangar Way
Watsonville, CA 95076
PHONE: 831-724-4522
FAX: 831-724-3188
E-Mail:
chemistry@toxscan.com

LAB USE ONLY

STORAGE LOCATION

FREEZER #

REFRIGERATOR #

SHELF#

Lab Use Only ID Number	Client Sample Identification	Sample Information			Bottle or Container Information:				CHECK THE APPROPRIATE BOX BELOW							SAMPLE CONDITION
		Sampling Date	Sampling Time	Sample Type	Sample Preservative	Bottle Type	Bottle Size	No. of Bottles								

SAMPLER'S SIGNATURE AND PRINTED NAME:

RELINQUISHED BY (SIGNATURE AND PRINTED NAME):	RECEIVED BY (SIGNATURE AND PRINTED NAME):	DATE:	TIME:

APPENDIX C

Monitoring Results

CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
1	SON-101-3.66-SB	8/12/2003	Toxscan	Antimony (Sb)	0.654	0.1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Antimony (Sb)	3.08	0.1	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Antimony (Sb)	0.582	0.1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Antimony (Sb)	0.547	0.1	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Antimony (Sb)	0.709	0.1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Antimony (Sb)	0.821	0.1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Antimony (Sb)	0.81	0.1	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Antimony (Sb)	4.49	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Antimony (Sb)	1.99	0.1	mg/kg	EPA 6020	
11	SM-92-13.8-EB	8/13/2003	Toxscan	Antimony (Sb)	3.48	0.1	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Antimony (Sb)	0.58	0.1	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Antimony (Sb)	2.5	0.1	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Antimony (Sb)	0.997	0.1	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Antimony (Sb)	0.916	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Antimony (Sb)	1.82	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Antimony (Sb)	1.76	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Antimony (Sb)	0.887	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Arsenic (As)	2.02	0.1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Arsenic (As)	5.97	0.1	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Arsenic (As)	3.07	0.1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Arsenic (As)	4.19	0.1	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Arsenic (As)	7.1	0.1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Arsenic (As)	9.31	0.1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Arsenic (As)	2.15	0.1	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Arsenic (As)	3.7	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Arsenic (As)	2.9	0.1	mg/kg	EPA 6020	
11	SM-92-13.8-EB	8/13/2003	Toxscan	Arsenic (As)	1.97	0.1	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Arsenic (As)	2.74	0.1	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Arsenic (As)	2.66	0.1	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Arsenic (As)	5.28	0.1	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Arsenic (As)	4.32	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Arsenic (As)	2.14	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Arsenic (As)	2.94	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Arsenic (As)	3.16	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Barium (Ba)	117	1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Barium (Ba)	180	0.5	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Barium (Ba)	153	0.5	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Barium (Ba)	196	0.25	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Barium (Ba)	381	1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Barium (Ba)	582	1	mg/kg	EPA 6020	

See end of Appendix C for Qualifier Definitions

CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
8	CC-4-30.0-EB	8/13/2003	Toxscan	Barium (Ba)	132	0.5	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Barium (Ba)	210	0.5	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Barium (Ba)	161	0.5	mg/kg	EPA 6020	EST-FD
11	SM-92-13.8-EB	8/13/2003	Toxscan	Barium (Ba)	315	0.5	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Barium (Ba)	209	0.5	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Barium (Ba)	147	0.5	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Barium (Ba)	272	0.5	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Barium (Ba)	223	0.5	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Barium (Ba)	136	1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Barium (Ba)	184	0.5	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Barium (Ba)	227	0.5	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
2	SON-116-6.15-WB	8/12/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
3	SOL-80-41.2-WB	8/11/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
4	SOL-80-32.6-EB	8/11/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
5	SOL-80-23.9-WB	8/11/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
6	SOL-12-3.2-EB	8/12/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
8	CC-4-30.0-EB	8/13/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
9	CC-24-0.95-WB	8/13/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
10	SM-380-4.8-WB	8/13/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
11	SM-92-13.8-EB	8/13/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
12	SM-280-6.9-SB	8/13/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
13	ALA-880-20.8-NB	8/13/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
14	ALA-580-17.7-WB	8/12/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
15	ALA-680-7.48-SB	8/12/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
16	SCL-101-34.8-NB	8/12/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
17	SCL-85-10.6-SB	8/12/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
18	SCL-101-0.0-NB	8/12/2003	McCampbell Analytical	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Beryllium (Be)	0.251	0.1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Beryllium (Be)	0.286	0.1	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Beryllium (Be)	0.211	0.1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Beryllium (Be)	0.277	0.1	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Beryllium (Be)	0.285	0.1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Beryllium (Be)	0.362	0.1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Beryllium (Be)	0.138	0.1	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Beryllium (Be)	0.235	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Beryllium (Be)	0.168	0.1	mg/kg	EPA 6020	
11	SM-92-13.8-EB	8/13/2003	Toxscan	Beryllium (Be)	0.127	0.1	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Beryllium (Be)	0.351	0.1	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Beryllium (Be)	<0.5	0.5	mg/kg	EPA 6020	

See end of Appendix C for Qualifier Definitions

CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Beryllium (Be)	0.314	0.1	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Beryllium (Be)	<0.5	0.5	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Beryllium (Be)	0.225	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Beryllium (Be)	0.199	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Beryllium (Be)	0.396	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Cadmium (Cd)	0.273	0.1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Cadmium (Cd)	0.603	0.1	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Cadmium (Cd)	0.303	0.1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Cadmium (Cd)	0.247	0.1	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Cadmium (Cd)	0.133	0.1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Cadmium (Cd)	0.184	0.1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Cadmium (Cd)	0.337	0.1	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Cadmium (Cd)	1.64	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Cadmium (Cd)	0.717	0.1	mg/kg	EPA 6020	
11	SM-92-13.8-EB	8/13/2003	Toxscan	Cadmium (Cd)	1.01	0.1	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Cadmium (Cd)	0.444	0.1	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Cadmium (Cd)	0.874	0.1	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Cadmium (Cd)	0.794	0.1	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Cadmium (Cd)	0.589	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Cadmium (Cd)	0.446	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Cadmium (Cd)	0.97	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Cadmium (Cd)	0.354	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Chromium (Cr)	47.5	0.1	mg/kg	EPA 6020	LB
2	SON-116-6.15-WB	8/12/2003	Toxscan	Chromium (Cr)	56.2	0.1	mg/kg	EPA 6020	LB
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Chromium (Cr)	66.8	0.1	mg/kg	EPA 6020	LB
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Chromium (Cr)	67.3	0.1	mg/kg	EPA 6020	LB
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Chromium (Cr)	29.2	0.1	mg/kg	EPA 6020	LB
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Chromium (Cr)	28.1	0.1	mg/kg	EPA 6020	LB
8	CC-4-30.0-EB	8/13/2003	Toxscan	Chromium (Cr)	39.8	0.1	mg/kg	EPA 6020	LB
9	CC-24-0.95-WB	8/13/2003	Toxscan	Chromium (Cr)	43	0.1	mg/kg	EPA 6020	LB
10	SM-380-4.8-WB	8/13/2003	Toxscan	Chromium (Cr)	58.9	0.1	mg/kg	EPA 6020	LB
11	SM-92-13.8-EB	8/13/2003	Toxscan	Chromium (Cr)	57.3	0.1	mg/kg	EPA 6020	LB
12	SM-280-6.9-SB	8/13/2003	Toxscan	Chromium (Cr)	144	0.1	mg/kg	EPA 6020	LB
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Chromium (Cr)	77.3	0.25	mg/kg	EPA 6020	LB
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Chromium (Cr)	37.6	0.1	mg/kg	EPA 6020	LB
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Chromium (Cr)	57.8	0.1	mg/kg	EPA 6020	LB
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Chromium (Cr)	51.6	1	mg/kg	EPA 6020	LB
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Chromium (Cr)	78.1	0.1	mg/kg	EPA 6020	LB
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Chromium (Cr)	35.4	0.1	mg/kg	EPA 6020	LB
1	SON-101-3.66-SB	8/12/2003	Toxscan	Cobalt (Co)	16.3	0.1	mg/kg	EPA 6020	

See end of Appendix C for Qualifier Definitions

CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
2	SON-116-6.15-WB	8/12/2003	Toxscan	Cobalt (Co)	17.4	0.1	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Cobalt (Co)	9.87	0.1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Cobalt (Co)	13.7	0.25	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Cobalt (Co)	20.2	0.25	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Cobalt (Co)	30.6	0.25	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Cobalt (Co)	22.4	0.5	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Cobalt (Co)	9.58	0.25	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Cobalt (Co)	10.1	0.5	mg/kg	EPA 6020	
11	SM-92-13.8-EB	8/13/2003	Toxscan	Cobalt (Co)	10.9	0.25	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Cobalt (Co)	25.6	0.25	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Cobalt (Co)	11.2	0.25	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Cobalt (Co)	10.3	0.5	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Cobalt (Co)	5.64	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Cobalt (Co)	7.35	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Cobalt (Co)	7.78	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Cobalt (Co)	5.29	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Copper (Cu)	23.9	0.25	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Copper (Cu)	22.9	0.25	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Copper (Cu)	25.5	0.25	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Copper (Cu)	27	0.25	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Copper (Cu)	34.4	0.25	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Copper (Cu)	41	0.25	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Copper (Cu)	53.8	0.5	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Copper (Cu)	72.9	0.25	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Copper (Cu)	94.1	0.5	mg/kg	EPA 6020	EST-FD
11	SM-92-13.8-EB	8/13/2003	Toxscan	Copper (Cu)	71.5	0.25	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Copper (Cu)	32.3	0.25	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Copper (Cu)	52.5	0.25	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Copper (Cu)	57.9	0.5	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Copper (Cu)	24.2	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Copper (Cu)	19.2	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Copper (Cu)	26.5	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Copper (Cu)	21.2	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
2	SON-116-6.15-WB	8/12/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
3	SOL-80-41.2-WB	8/11/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
4	SOL-80-32.6-EB	8/11/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
5	SOL-80-23.9-WB	8/11/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
6	SOL-12-3.2-EB	8/12/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
8	CC-4-30.0-EB	8/13/2003	McCampbell Analytical	Ethylbenzene	0.045	0.005	mg/kg	SW 8015Cm	

See end of Appendix C for Qualifier Definitions

CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
9	CC-24-0.95-WB	8/13/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
10	SM-380-4.8-WB	8/13/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
11	SM-92-13.8-EB	8/13/2003	McCampbell Analytical	Ethylbenzene	0.0074	0.005	mg/kg	SW 8015Cm	
12	SM-280-6.9-SB	8/13/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
13	ALA-880-20.8-NB	8/13/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
14	ALA-580-17.7-WB	8/12/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
15	ALA-680-7.48-SB	8/12/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
16	SCL-101-34.8-NB	8/12/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
17	SCL-85-10.6-SB	8/12/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
18	SCL-101-0.0-NB	8/12/2003	McCampbell Analytical	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Lead (Pb)	180	0.5	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Lead (Pb)	56.3	0.25	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Lead (Pb)	69.5	0.25	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Lead (Pb)	65	0.5	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Lead (Pb)	16.1	1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Lead (Pb)	16.6	1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Lead (Pb)	29.2	0.5	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Lead (Pb)	470	2	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Lead (Pb)	148	0.5	mg/kg	EPA 6020	EST-FD
11	SM-92-13.8-EB	8/13/2003	Toxscan	Lead (Pb)	54.1	0.5	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Lead (Pb)	48.9	0.5	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Lead (Pb)	98	0.5	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Lead (Pb)	269	0.5	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Lead (Pb)	407	2	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Lead (Pb)	218	1	mg/kg	EPA 6020	NRMS
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Lead (Pb)	611	2.5	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Lead (Pb)	82.1	2.5	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Mercury (Hg)	0.0787	0.02	mg/kg	EPA 7471A	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Mercury (Hg)	3.96	0.02	mg/kg	EPA 7471A	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Mercury (Hg)	0.076	0.02	mg/kg	EPA 7471A	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Mercury (Hg)	0.057	0.02	mg/kg	EPA 7471A	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Mercury (Hg)	0.021	0.02	mg/kg	EPA 7471A	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Mercury (Hg)	0.031	0.02	mg/kg	EPA 7471A	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Mercury (Hg)	0.146	0.02	mg/kg	EPA 7471A	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Mercury (Hg)	0.188	0.02	mg/kg	EPA 7471A	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Mercury (Hg)	0.063	0.02	mg/kg	EPA 7471A	EST-FD
11	SM-92-13.8-EB	8/13/2003	Toxscan	Mercury (Hg)	0.044	0.02	mg/kg	EPA 7471A	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Mercury (Hg)	0.042	0.02	mg/kg	EPA 7471A	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Mercury (Hg)	0.066	0.02	mg/kg	EPA 7471A	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Mercury (Hg)	0.03	0.02	mg/kg	EPA 7471A	

See end of Appendix C for Qualifier Definitions

CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Mercury (Hg)	0.064	0.02	mg/kg	EPA 7471A	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Mercury (Hg)	0.036	0.02	mg/kg	EPA 7471A	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Mercury (Hg)	0.059	0.02	mg/kg	EPA 7471A	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Mercury (Hg)	0.045	0.02	mg/kg	EPA 7471A	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Molybdenum (Mo)	1.87	0.1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Molybdenum (Mo)	0.64	0.1	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Molybdenum (Mo)	1.12	0.1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Molybdenum (Mo)	0.722	0.1	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Molybdenum (Mo)	0.698	0.1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Molybdenum (Mo)	1.6	0.1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Molybdenum (Mo)	3.17	0.1	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Molybdenum (Mo)	3.27	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Molybdenum (Mo)	2.7	0.1	mg/kg	EPA 6020	EST-FD
11	SM-92-13.8-EB	8/13/2003	Toxscan	Molybdenum (Mo)	2.72	0.1	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Molybdenum (Mo)	0.933	0.1	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Molybdenum (Mo)	2.68	0.1	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Molybdenum (Mo)	1.52	0.1	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Molybdenum (Mo)	1.67	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Molybdenum (Mo)	2.25	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Molybdenum (Mo)	1.79	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Molybdenum (Mo)	0.954	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Nickel (Ni)	31.7	0.1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Nickel (Ni)	406	0.5	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Nickel (Ni)	89.7	0.25	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Nickel (Ni)	105	0.25	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Nickel (Ni)	23.5	0.1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Nickel (Ni)	31.7	0.1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Nickel (Ni)	23.7	0.1	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Nickel (Ni)	28.3	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Nickel (Ni)	30.4	0.1	mg/kg	EPA 6020	
11	SM-92-13.8-EB	8/13/2003	Toxscan	Nickel (Ni)	52.7	0.1	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Nickel (Ni)	155	0.1	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Nickel (Ni)	43.5	0.1	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Nickel (Ni)	27.5	0.1	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Nickel (Ni)	32.9	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Nickel (Ni)	46.8	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Nickel (Ni)	70.3	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Nickel (Ni)	21.3	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Selenium (Se)	<0.1	0.1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Selenium (Se)	0.209	0.1	mg/kg	EPA 6020	

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CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Selenium (Se)	<0.1	0.1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Selenium (Se)	0.179	0.1	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Selenium (Se)	0.262	0.1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Selenium (Se)	0.356	0.1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Selenium (Se)	0.138	0.1	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Selenium (Se)	0.284	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Selenium (Se)	0.205	0.1	mg/kg	EPA 6020	
11	SM-92-13.8-EB	8/13/2003	Toxscan	Selenium (Se)	0.14	0.1	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Selenium (Se)	0.474	0.1	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Selenium (Se)	0.287	0.1	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Selenium (Se)	0.213	0.1	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Selenium (Se)	0.321	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Selenium (Se)	1.08	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Selenium (Se)	0.169	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Selenium (Se)	0.278	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Silver (Ag)	0.171	0.1	mg/kg	EPA 6020	HB
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Silver (Ag)	0.219	0.1	mg/kg	EPA 6020	HB
10	SM-380-4.8-WB	8/13/2003	Toxscan	Silver (Ag)	0.1	0.1	mg/kg	EPA 6020	HB
11	SM-92-13.8-EB	8/13/2003	Toxscan	Silver (Ag)	0.184	0.1	mg/kg	EPA 6020	HB
12	SM-280-6.9-SB	8/13/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Silver (Ag)	0.102	0.1	mg/kg	EPA 6020	HB
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Silver (Ag)	0.123	0.1	mg/kg	EPA 6020	HB
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Silver (Ag)	<0.1	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Thallium (Tl)	0.144	0.1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Thallium (Tl)	0.226	0.1	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Thallium (Tl)	0.121	0.1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Thallium (Tl)	<0.25	0.25	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Thallium (Tl)	<0.25	0.25	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Thallium (Tl)	<0.25	0.25	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Thallium (Tl)	<0.5	0.5	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Thallium (Tl)	<0.25	0.25	mg/kg	EPA 6020	

See end of Appendix C for Qualifier Definitions

CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
10	SM-380-4.8-WB	8/13/2003	Toxscan	Thallium (Tl)	<0.5	0.5	mg/kg	EPA 6020	
11	SM-92-13.8-EB	8/13/2003	Toxscan	Thallium (Tl)	<0.25	0.25	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Thallium (Tl)	<0.25	0.25	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Thallium (Tl)	<0.25	0.25	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Thallium (Tl)	<0.5	0.5	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Thallium (Tl)	<0.1	0.1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Thallium (Tl)	<0.1	0.1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Thallium (Tl)	<0.1	0.1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Thallium (Tl)	0.149	0.1	mg/kg	EPA 6020	
1	SON-101-3.66-SB	8/12/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
2	SON-116-6.15-WB	8/12/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
3	SOL-80-41.2-WB	8/11/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
4	SOL-80-32.6-EB	8/11/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
5	SOL-80-23.9-WB	8/11/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
6	SOL-12-3.2-EB	8/12/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
8	CC-4-30.0-EB	8/13/2003	McCampbell Analytical	Toluene	0.12	0.005	mg/kg	SW 8015Cm	
9	CC-24-0.95-WB	8/13/2003	McCampbell Analytical	Toluene	0.03	0.005	mg/kg	SW 8015Cm	
10	SM-380-4.8-WB	8/13/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
11	SM-92-13.8-EB	8/13/2003	McCampbell Analytical	Toluene	0.0076	0.005	mg/kg	SW 8015Cm	
12	SM-280-6.9-SB	8/13/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
13	ALA-880-20.8-NB	8/13/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
14	ALA-580-17.7-WB	8/12/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
15	ALA-680-7.48-SB	8/12/2003	McCampbell Analytical	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
16	SCL-101-34.8-NB	8/12/2003	McCampbell Analytical	Toluene	0.013	0.005	mg/kg	SW 8015Cm	
17	SCL-85-10.6-SB	8/12/2003	McCampbell Analytical	Toluene	0.025	0.005	mg/kg	SW 8015Cm	
18	SCL-101-0.0-NB	8/12/2003	McCampbell Analytical	Toluene	0.01	0.005	mg/kg	SW 8015Cm	
1	SON-101-3.66-SB	8/12/2003	Toxscan	TPH-Diesel Range Organics	81	50	mg/kg	EPA 8015B	
2	SON-116-6.15-WB	8/12/2003	Toxscan	TPH-Diesel Range Organics	<50	50	mg/kg	EPA 8015B	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	TPH-Diesel Range Organics	200	100	mg/kg	EPA 8015B	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	TPH-Diesel Range Organics	180	100	mg/kg	EPA 8015B	SHB
5	SOL-80-23.9-WB	8/11/2003	Toxscan	TPH-Diesel Range Organics	<10	10	mg/kg	EPA 8015B	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	TPH-Diesel Range Organics	<10	10	mg/kg	EPA 8015B	
8	CC-4-30.0-EB	8/13/2003	Toxscan	TPH-Diesel Range Organics	220	100	mg/kg	EPA 8015B	SHB
9	CC-24-0.95-WB	8/13/2003	Toxscan	TPH-Diesel Range Organics	450	100	mg/kg	EPA 8015B	SHB
10	SM-380-4.8-WB	8/13/2003	Toxscan	TPH-Diesel Range Organics	310	50	mg/kg	EPA 8015B	EST-FD
11	SM-92-13.8-EB	8/13/2003	Toxscan	TPH-Diesel Range Organics	110	50	mg/kg	EPA 8015B	
12	SM-280-6.9-SB	8/13/2003	Toxscan	TPH-Diesel Range Organics	60	20	mg/kg	EPA 8015B	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	TPH-Diesel Range Organics	110	50	mg/kg	EPA 8015B	EST-NR
14	ALA-580-17.7-WB	8/12/2003	Toxscan	TPH-Diesel Range Organics	150	50	mg/kg	EPA 8015B	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	TPH-Diesel Range Organics	51	50	mg/kg	EPA 8015B	

See end of Appendix C for Qualifier Definitions

CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
16	SCL-101-34.8-NB	8/12/2003	Toxscan	TPH-Diesel Range Organics	280	50	mg/kg	EPA 8015B	SHB
17	SCL-85-10.6-SB	8/12/2003	Toxscan	TPH-Diesel Range Organics	82	50	mg/kg	EPA 8015B	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	TPH-Diesel Range Organics	<50	50	mg/kg	EPA 8015B	SHB
1	SON-101-3.66-SB	8/12/2003	Toxscan	TPH-Waste Oil	460	100	mg/kg	EPA 8015B	
2	SON-116-6.15-WB	8/12/2003	Toxscan	TPH-Waste Oil	800	100	mg/kg	EPA 8015B	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	TPH-Waste Oil	620	200	mg/kg	EPA 8015B	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	TPH-Waste Oil	<200	200	mg/kg	EPA 8015B	SHB
5	SOL-80-23.9-WB	8/11/2003	Toxscan	TPH-Waste Oil	<20	20	mg/kg	EPA 8015B	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	TPH-Waste Oil	<20	20	mg/kg	EPA 8015B	
8	CC-4-30.0-EB	8/13/2003	Toxscan	TPH-Waste Oil	870	200	mg/kg	EPA 8015B	SHB
9	CC-24-0.95-WB	8/13/2003	Toxscan	TPH-Waste Oil	1100	200	mg/kg	EPA 8015B	SHB
10	SM-380-4.8-WB	8/13/2003	Toxscan	TPH-Waste Oil	1000	100	mg/kg	EPA 8015B	
11	SM-92-13.8-EB	8/13/2003	Toxscan	TPH-Waste Oil	1500	100	mg/kg	EPA 8015B	
12	SM-280-6.9-SB	8/13/2003	Toxscan	TPH-Waste Oil	500	40	mg/kg	EPA 8015B	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	TPH-Waste Oil	530	100	mg/kg	EPA 8015B	EST-NR
14	ALA-580-17.7-WB	8/12/2003	Toxscan	TPH-Waste Oil	1000	100	mg/kg	EPA 8015B	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	TPH-Waste Oil	400	100	mg/kg	EPA 8015B	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	TPH-Waste Oil	800	100	mg/kg	EPA 8015B	SHB
17	SCL-85-10.6-SB	8/12/2003	Toxscan	TPH-Waste Oil	620	100	mg/kg	EPA 8015B	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	TPH-Waste Oil	530	100	mg/kg	EPA 8015B	SHB
1	SON-101-3.66-SB	8/12/2003	Toxscan	Vanadium (V)	68.3	0.1	mg/kg	EPA 6020	LB
2	SON-116-6.15-WB	8/12/2003	Toxscan	Vanadium (V)	43	0.1	mg/kg	EPA 6020	LB
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Vanadium (V)	63.4	0.1	mg/kg	EPA 6020	LB
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Vanadium (V)	60.1	0.1	mg/kg	EPA 6020	LB
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Vanadium (V)	86.3	0.25	mg/kg	EPA 6020	LB
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Vanadium (V)	95.9	0.25	mg/kg	EPA 6020	LB
8	CC-4-30.0-EB	8/13/2003	Toxscan	Vanadium (V)	59.4	0.1	mg/kg	EPA 6020	LB
9	CC-24-0.95-WB	8/13/2003	Toxscan	Vanadium (V)	48.6	0.1	mg/kg	EPA 6020	LB
10	SM-380-4.8-WB	8/13/2003	Toxscan	Vanadium (V)	51.7	0.1	mg/kg	EPA 6020	LB
11	SM-92-13.8-EB	8/13/2003	Toxscan	Vanadium (V)	63.2	0.1	mg/kg	EPA 6020	LB
12	SM-280-6.9-SB	8/13/2003	Toxscan	Vanadium (V)	60.9	0.1	mg/kg	EPA 6020	LB
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Vanadium (V)	45.8	0.1	mg/kg	EPA 6020	LB
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Vanadium (V)	62.1	0.1	mg/kg	EPA 6020	LB
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Vanadium (V)	54.3	0.1	mg/kg	EPA 6020	LB
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Vanadium (V)	49.3	0.1	mg/kg	EPA 6020	LB
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Vanadium (V)	56.2	0.1	mg/kg	EPA 6020	LB
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Vanadium (V)	59.6	0.1	mg/kg	EPA 6020	LB
1	SON-101-3.66-SB	8/12/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
2	SON-116-6.15-WB	8/12/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
3	SOL-80-41.2-WB	8/11/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	

See end of Appendix C for Qualifier Definitions

CALTRANS DECANTING WASTE CHARACTERIZATION ANALYTICAL DATA

SITE CODE	SITE	SAMPLE DATE	LAB NAME	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	QUALIFIERS
4	SOL-80-32.6-EB	8/11/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
5	SOL-80-23.9-WB	8/11/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
6	SOL-12-3.2-EB	8/12/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
8	CC-4-30.0-EB	8/13/2003	McCampbell Analytical	Xylenes	0.085	0.005	mg/kg	SW 8015Cm	
9	CC-24-0.95-WB	8/13/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
10	SM-380-4.8-WB	8/13/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
11	SM-92-13.8-EB	8/13/2003	McCampbell Analytical	Xylenes	0.08	0.005	mg/kg	SW 8015Cm	
12	SM-280-6.9-SB	8/13/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
13	ALA-880-20.8-NB	8/13/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
14	ALA-580-17.7-WB	8/12/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
15	ALA-680-7.48-SB	8/12/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
16	SCL-101-34.8-NB	8/12/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
17	SCL-85-10.6-SB	8/12/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
18	SCL-101-0.0-NB	8/12/2003	McCampbell Analytical	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
1	SON-101-3.66-SB	8/12/2003	Toxscan	Zinc (Zn)	93.2	1	mg/kg	EPA 6020	
2	SON-116-6.15-WB	8/12/2003	Toxscan	Zinc (Zn)	498	2.5	mg/kg	EPA 6020	
3	SOL-80-41.2-WB	8/11/2003	Toxscan	Zinc (Zn)	148	1	mg/kg	EPA 6020	
4	SOL-80-32.6-EB	8/11/2003	Toxscan	Zinc (Zn)	156	1	mg/kg	EPA 6020	
5	SOL-80-23.9-WB	8/11/2003	Toxscan	Zinc (Zn)	51.2	1	mg/kg	EPA 6020	
6	SOL-12-3.2-EB	8/12/2003	Toxscan	Zinc (Zn)	53	1	mg/kg	EPA 6020	
8	CC-4-30.0-EB	8/13/2003	Toxscan	Zinc (Zn)	105	1	mg/kg	EPA 6020	
9	CC-24-0.95-WB	8/13/2003	Toxscan	Zinc (Zn)	408	2.5	mg/kg	EPA 6020	
10	SM-380-4.8-WB	8/13/2003	Toxscan	Zinc (Zn)	406	5	mg/kg	EPA 6020	
11	SM-92-13.8-EB	8/13/2003	Toxscan	Zinc (Zn)	268	2.5	mg/kg	EPA 6020	
12	SM-280-6.9-SB	8/13/2003	Toxscan	Zinc (Zn)	476	2.5	mg/kg	EPA 6020	
13	ALA-880-20.8-NB	8/13/2003	Toxscan	Zinc (Zn)	614	0.5	mg/kg	EPA 6020	
14	ALA-580-17.7-WB	8/12/2003	Toxscan	Zinc (Zn)	137	1	mg/kg	EPA 6020	
15	ALA-680-7.48-SB	8/12/2003	Toxscan	Zinc (Zn)	156	1	mg/kg	EPA 6020	
16	SCL-101-34.8-NB	8/12/2003	Toxscan	Zinc (Zn)	316	1	mg/kg	EPA 6020	
17	SCL-85-10.6-SB	8/12/2003	Toxscan	Zinc (Zn)	170	1	mg/kg	EPA 6020	
18	SCL-101-0.0-NB	8/12/2003	Toxscan	Zinc (Zn)	90.2	1	mg/kg	EPA 6020	

See end of Appendix C for Qualifier Definitions

APPENDIX **D**

QA/QC Methods and Results

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

This section presents the results of quality assurance/quality control (QA/QC) analyses and an evaluation the QA/QC analytical data collected. The purpose of the QA/QC review is to identify any apparent QA/QC problems that may limit or bias reported data. QA/QC samples were collected and analyzed at five decanting sites, as shown in **Table 3**.

The laboratories (Toxscan and McCampbell Analytical Inc.) delivered all data reports in a hard copy report format. The hard copy format is considered the official record of results and is the report examined in the initial screening of the analytical data.

Table 3. Quality Control Sample Collection Schedule

Site Number	Site Code	Site Location	QA/QC
1	FB-SON-101-3.66-SB	North Bay – Sonoma County	Field Blank
8	FB-CC-4-30.0-EB	Delta – Contra Costa County	Field Blank
10	FD-SM-380-4.8-WB	West Bay – San Mateo County	Field Duplicate
13	ALA-880-20.8-NB	East Bay – Alameda County	Laboratory Duplicate
16	SCL-101-34.8-NB	South Bay – Santa Clara	MS/MSD

QA/QC Methods

QA/QC methods used to evaluate laboratory performance are described below. QA/QC results are presented in the following section.

Initial Screening

The initial screening process is conducted when a laboratory report is received. The reported data are checked as soon as possible to identify any gross errors in the sampling, analysis, or reporting processes. Reported data are checked against the chain of custody forms and for adherence to specifications in the Caltrans Decanting Waste Characterization Sampling and Analysis Plan, August 2003, and for questionable (out-of-range) analytical results. The initial screening includes the checks on the following items:

- Laboratory reporting errors – identify typographical errors, incorrect units, etc.
- Completeness – were all the analyses performed as requested?
- Holding times – were all analyses performed within prescribed holding times?
- Detection limits – did reported analytical detection limits meet requirements?

Reported concentrations that appear to be out of range or are inconsistent with other results are indicators of potential laboratory errors, including reporting problems (e.g., typographical errors). Such results are investigated when detected. An example of this would be a constituent

concentration that is orders of magnitude different than the same constituent for other sites. The results are also reviewed to ensure that all chain-of-custody requests were completed as requested and that analyses were performed within the method-prescribed holding time. Detection limit requirements are also checked to ensure that the laboratory is performing as required.

The initial screening typically involves additional communication with the laboratory and requests for amended laboratory reports. When an amended laboratory report is issued it supersedes previously-issued reports.

QA/QC Data Evaluation

The QA/QC data evaluation assesses contamination, precision, and accuracy. Both a laboratory-initiated assessment (internal QA/QC) and a field-initiated assessment (external QA/QC) are performed. All QA/QC results are included in **Appendix B**. QA/QC results are compared to program control limits based on EPA methods, internal laboratory standards, and historical laboratory performance. The laboratory identifies out-of-range internal QA/QC results and reports them in the report narrative. Externally-identified out-of-range results were reported to the laboratory for verification and case-by-case discussion. Environmental results are qualified based on the QA/QC results and EPA guidance for metals[1] and organics.[2]

The manually-verified QA/QC data are imported from a spreadsheet format into a relational database system. The database is structured to apply QA/QC qualification to individual data points in the environmental data set based on the QA/QC results.

Contamination Checks

Contamination of samples is assessed using method and field blanks. Blanks are prepared using reagent grade de-ionized water and tested using analytical procedures identical to those used for the environmental samples. The conditions under which the blanks are prepared follow, as closely as possible, the conditions in the field or laboratory, as appropriate for the type of blank.

A method (or reagent) blank is analyzed, by the analytical laboratory, for every batch of samples. The method blank is a reagent grade volume of de-ionized water tested using analytical procedures identical to those used for the environmental samples. A detected concentration is an indication of contamination in the analytical process.

When detected blank concentrations (or hit) are reported, treatment of environmental data is done according to EPA protocols, as follows. A field blank is prepared in the field, using procedures that simulate the actual field sampling procedures. A hit reported in a field blank

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[1] United States Environmental Protection Agency. April 1995. *Guidance on the Documentation and Evaluation of Trace Metals Data Collected for Clean Water Act Compliance Monitoring*. EPA 821-B-95-002.

[2] United States Environmental Protection Agency. June 1991 Draft. *National Functional Guidelines for Organic Data Review*. EPA 540-R-94-090.

indicates that contamination has occurred at some point during the equipment cleaning, field sampling, or analytical procedures.

Where environmental sample results for metals and organics are detected at levels less than 5 times the detected blank result, the environmental results are qualified as not detected at the reported concentration of the environmental sample. When the environmental sample results for metals are detected at levels greater than 5 but less than 10 times the detected blank result, the environmental results are qualified as upper limits of the true concentration.

Accuracy Checks

Accuracy checks consist of measurements of the recovery of a "spike" of a known concentration, followed by calculation of percent recovery according to the following formula:

$$R = 100\%*[(C_s-C)\div s]$$

Where, R = percent recovery

C_s = spiked sample concentration

C = sample concentration (for spiked matrices)

s = concentration equivalent of spike added.

Laboratory control samples (LCS) and standard reference material (SRM) are batch checks for recovery of a known concentration of a standard solution used to assess the accuracy of the entire recovery process from preparation of the sample to analysis. LCS samples are analyzed in the same manner as the environmental samples.

Matrix spike analysis involves the introduction of a known spike in the original "matrix" (sample solution), and is a measure of the accuracy of the recovery performance of the laboratory. Matrix interference can lead to recovery problems and raised detection limits. Re-analysis is the first corrective action once matrix interference problems are identified, but re-analysis is only possible when sufficient sample volume is available.

Surrogate matrix spikes are used as a check on the extraction process for organic compounds. Surrogate recovery checks use organic compounds other than the constituent being tested for, but with similar chemical characteristics. The surrogate used is easier to distinguish from other compounds and can be more accurately extracted and recovered.

Precision Checks

Precision is the measurement of the difference between samples that are presupposed to be replicates (i.e., collected and analyzed in the same manner). The relative percent difference (RPD) is calculated as a measure of the difference between replicate samples. The RPD is calculated from field duplicate, lab duplicate, matrix spike duplicate and laboratory spike duplicate data as follows:

$$RPD = 100\%*|R_1-R_2|\div[(R_1+R_2)\div 2]$$

Where, RPD = relative percent difference

R_1 = replicate sample #1

R_2 = replicate sample #2

Laboratory duplicates are samples split in the laboratory to measure the precision of the laboratory analysis, including the sub-sampling process (the process of splitting a sample from a parent sample).

Field duplicates are sampled one directly after the other in the field and submitted to the laboratory as separate samples. Field duplicates provide a measure of the concentration variability introduced by field and laboratory procedures.

Matrix spike duplicate (MSD) analysis checks the precision of the matrix spike (MS) recovery. Ideally, triple the normal sample volume is available for the analysis of a MS and a MSD.

Laboratory control spike duplicate (LCSD) analysis checks the precision of the LCS recovery.

Field and laboratory duplicate samples must have a RPD less than the maximum allowable value (MAV) or have an absolute difference of one detection limit or less. LCS and MS replicates must have an RPD less than the MAV. Maximum allowable RPD values, out-of range results, and the resulting data qualifications are presented in Appendix C.

QA/QC Results

The following sub-sections present QA/QC results from the contract laboratories used in Decanting-Pit Waste Characterization sampling. Specific issues include laboratory performance with regard to internal and external QA/QC analyses, and detection limits achieved. Field blanks, reagent (method) blanks, field duplicates, laboratory duplicates, matrix spikes, matrix spike duplicates, laboratory control spikes, laboratory control spike duplicates, standard reference material and surrogate spikes were all considered in the analysis of laboratory performance. All QA/QC results are reported in **Appendix B**.

Initial Screening

Laboratory data problems encountered during the initial screening process of the Decanting-Pit Waste Characterization sample analytical data are as follows:

The mercury result reported for Site 2 was observed to be significantly higher than the mercury results reported for all of the other sites. The Site 2 mercury result was reported to be 3.96 mg/kg, while the reported mercury results for the other 16 sites ranged from 0.021 to 0.188 mg/kg. Therefore, the analytical laboratory was contacted and asked to review the Site 2 result. After the laboratory confirmed the result, they were asked to re-analyze the sample. The re-analysis (although preformed out of hold time) produced a similar result to that of the original, thereby confirming the original result.

Laboratory duplicate analysis for mercury, requested on the Site 13 sample, was not analyzed as requested on the chain of custody. Follow-up correspondence with the analytical laboratory revealed that the laboratory duplicate analysis was not conducted due to a laboratory error.

Contamination Checks

No metals, TPH-Diesel Range Organics, TPH-Waste Oil, or BTEX compounds were detected in the method blanks. Therefore, there are no detected sources of sample contamination attributable to analytical processes.

No metals, TPH-Diesel Range Organics, TPH-Waste Oil, or BTEX compounds were detected in the field blanks, with the exception of chromium. Chromium was detected in one of the two field blanks, at a concentration of 1.2 µg/L. Since the chromium field blank result is reported at such a low concentration, well below chromium levels detected in all of the decanting-pit waste samples, no data qualification is required.

Accuracy

The standard reference material percent recovery results for chromium and vanadium were less than the lower acceptability limits. Therefore, the environmental samples associated with the standard reference material results were qualified as "low bias" (LB). The standard reference material percent recovery result for silver was greater than the upper acceptability limit. Therefore, the environmental samples associated with standard reference material result were qualified as "high bias" (HB).

The matrix spike result for TPH-Diesel Range Organics at Site 16 is reported as "Not Reported" and flagged in the lab report as "The MS/MSD are outside QC limits due to sample matrix interference." Because of this sample matrix interference, no percent recovery could be calculated for this QA/QC result to measure the accuracy of the recovery performance by the laboratory for TPH-Diesel Range Organics. Therefore, no data qualification resulted.

The surrogate spike results for TPH-Diesel Range Organics and TPH-Waste Oil at Sites 4, 8, 9, 16, and 18 were greater than the upper acceptability limit, and the environmental results were reported above the detection limit. Therefore, the environmental sample results associated with the surrogate spikes were qualified as "surrogate high bias" (SHB).

Based on the QA/QC spike results, the appropriate environmental data points have been qualified and reported in **Appendix C**.

Precision

The calculated relative percent difference between the environmental results and laboratory duplicate results for TPH-Diesel Range Organics and TPH-Waste Oil at Site 13 were greater than the maximum allowable value RPD. Therefore, the environmental sample results were qualified as "estimated and not reproducible due to analytical variability" (EST-NR).

The calculated relative percent difference between the environmental results and field duplicate results for barium, copper, lead, mercury, molybdenum, and TPH-Diesel Range Organics at Site

10 were greater than the maximum allowable value RPD. Therefore, the environmental sample results were qualified as "estimated" (EST-FD).

The calculated relative percent difference between the matrix spike and matrix spike duplicate for lead at Site 16 was greater than the maximum allowable value RPD. Therefore, the environmental sample associated with the matrix spike duplicate result is qualified as "not reproducible due to matrix spike variability" (NRMS).

The matrix spike and matrix spike duplicate percent recovery results for TPH-Diesel Range Organics at Site 16 were reported as "Not Reported" and flagged in the lab report as "The MS/MSD are outside QC limits due to sample matrix interference." Because of this sample matrix interference no percent recovery or relative percent difference could be calculated for these QA/QC results to measure the precision of the matrix spike recovery of TPH-Diesel Range Organics. Therefore, no data qualification resulted.

The appropriate environmental data points have been qualified and reported in **Appendix C**.

Holding Times Achieved

All analyses were conducted within the maximum allowable holding times specified by the analytical methods.

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
1	SON-101-3.66-SB	Toxscan	FB	Antimony (Sb)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Antimony (Sb)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Arsenic (As)	<2	2	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Arsenic (As)	<2	2	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Barium (Ba)	<2	2	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Barium (Ba)	<2	2	ug/L	EPA 200.8	
1	SON-101-3.66-SB	McCampbell Analytical	FB	Benzene	<0.5	0.5	ug/L	SW 8015Cm	
8	CC-4-30.0-EB	McCampbell Analytical	FB	Benzene	<0.5	0.5	ug/L	SW 8015Cm	
1	SON-101-3.66-SB	Toxscan	FB	Beryllium (Be)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Beryllium (Be)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Cadmium (Cd)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Cadmium (Cd)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Chromium (Cr)	1.2	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Chromium (Cr)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Cobalt (Co)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Cobalt (Co)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Copper (Cu)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Copper (Cu)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	McCampbell Analytical	FB	Ethylbenzene	<0.5	0.5	ug/L	SW 8015Cm	
8	CC-4-30.0-EB	McCampbell Analytical	FB	Ethylbenzene	<0.5	0.5	ug/L	SW 8015Cm	
1	SON-101-3.66-SB	Toxscan	FB	Lead (Pb)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Lead (Pb)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Mercury (Hg)	<5	5	ng/L	EPA 245.7	
8	CC-4-30.0-EB	Toxscan	FB	Mercury (Hg)	<5	5	ng/L	EPA 245.7	
1	SON-101-3.66-SB	Toxscan	FB	Molybdenum (Mo)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Molybdenum (Mo)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Nickel (Ni)	<2	2	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Nickel (Ni)	<2	2	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Selenium (Se)	<2	2	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Selenium (Se)	<2	2	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Silver (Ag)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Silver (Ag)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	Toxscan	FB	Thallium (Tl)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Thallium (Tl)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	McCampbell Analytical	FB	Toluene	<0.5	0.5	ug/L	SW 8015Cm	
8	CC-4-30.0-EB	McCampbell Analytical	FB	Toluene	<0.5	0.5	ug/L	SW 8015Cm	
1	SON-101-3.66-SB	Toxscan	FB	Vanadium (V)	<1	1	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Vanadium (V)	<1	1	ug/L	EPA 200.8	
1	SON-101-3.66-SB	McCampbell Analytical	FB	Xylenes	<0.5	0.5	ug/L	SW 8015Cm	
8	CC-4-30.0-EB	McCampbell Analytical	FB	Xylenes	<0.5	0.5	ug/L	SW 8015Cm	

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
1	SON-101-3.66-SB	Toxscan	FB	Zinc (Zn)	<5	5	ug/L	EPA 200.8	
8	CC-4-30.0-EB	Toxscan	FB	Zinc (Zn)	<5	5	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LCS	Antimony (Sb)	24.5		ug/L	EPA 200.8	98
0	Toxscan	Toxscan	FB LCS	Arsenic (As)	26.3		ug/L	EPA 200.8	105
0	Toxscan	Toxscan	FB LCS	Barium (Ba)	25.9		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB LCS	Beryllium (Be)	25.4		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB LCS	Cadmium (Cd)	25.9		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB LCS	Chromium (Cr)	26.2		ug/L	EPA 200.8	105
0	Toxscan	Toxscan	FB LCS	Cobalt (Co)	25		ug/L	EPA 200.8	100
0	Toxscan	Toxscan	FB LCS	Copper (Cu)	26.5		ug/L	EPA 200.8	106
0	Toxscan	Toxscan	FB LCS	Lead (Pb)	25.1		ug/L	EPA 200.8	100
0	Toxscan	Toxscan	FB LCS	Molybdenum (Mo)	25.2		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB LCS	Nickel (Ni)	25.5		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB LCS	Selenium (Se)	27		ug/L	EPA 200.8	108
0	Toxscan	Toxscan	FB LCS	Silver (Ag)	27.3		ug/L	EPA 200.8	109
0	Toxscan	Toxscan	FB LCS	Thallium (Tl)	25.6		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB LCS	Vanadium (V)	25.1		ug/L	EPA 200.8	100
0	Toxscan	Toxscan	FB LCS	Zinc (Zn)	136		ug/L	EPA 200.8	109
0	Toxscan	Toxscan	FB LCSD	Antimony (Sb)	24.1		ug/L	EPA 200.8	96.4
0	Toxscan	Toxscan	FB LCSD	Arsenic (As)	24.9		ug/L	EPA 200.8	99.6
0	Toxscan	Toxscan	FB LCSD	Barium (Ba)	25.5		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB LCSD	Beryllium (Be)	271		ug/L	EPA 200.8	108
0	Toxscan	Toxscan	FB LCSD	Cadmium (Cd)	26		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB LCSD	Chromium (Cr)	26		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB LCSD	Cobalt (Co)	25.2		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB LCSD	Copper (Cu)	26.9		ug/L	EPA 200.8	108
0	Toxscan	Toxscan	FB LCSD	Lead (Pb)	25.2		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB LCSD	Molybdenum (Mo)	25.1		ug/L	EPA 200.8	100
0	Toxscan	Toxscan	FB LCSD	Nickel (Ni)	25.7		ug/L	EPA 200.8	103
0	Toxscan	Toxscan	FB LCSD	Selenium (Se)	26.9		ug/L	EPA 200.8	108
0	Toxscan	Toxscan	FB LCSD	Silver (Ag)	27.4		ug/L	EPA 200.8	110
0	Toxscan	Toxscan	FB LCSD	Thallium (Tl)	25.7		ug/L	EPA 200.8	103
0	Toxscan	Toxscan	FB LCSD	Vanadium (V)	24.8		ug/L	EPA 200.8	99.2
0	Toxscan	Toxscan	FB LCSD	Zinc (Zn)	132		ug/L	EPA 200.8	106
0	Toxscan	Toxscan	FB LD	Antimony (Sb)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Arsenic (As)	<2	2	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Barium (Ba)	<2	2	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Beryllium (Be)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Cadmium (Cd)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Chromium (Cr)	1.23	1	ug/L	EPA 200.8	

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
0	Toxscan	Toxscan	FB LD	Cobalt (Co)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Copper (Cu)	19.7	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Lead (Pb)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Molybdenum (Mo)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Nickel (Ni)	<2	2	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Selenium (Se)	<2	2	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Silver (Ag)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Thallium (Tl)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Vanadium (V)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB LD	Zinc (Zn)	354	5	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Antimony (Sb)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Arsenic (As)	<2	2	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Barium (Ba)	<2	2	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Beryllium (Be)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Cadmium (Cd)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Chromium (Cr)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Cobalt (Co)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Copper (Cu)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Lead (Pb)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Mercury (Hg)	<5	5	ng/L	EPA 245.7	
0	Toxscan	Toxscan	FB MB	Molybdenum (Mo)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Nickel (Ni)	<2	2	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Selenium (Se)	<2	2	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Silver (Ag)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Thallium (Tl)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Vanadium (V)	<1	1	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MB	Zinc (Zn)	<5	5	ug/L	EPA 200.8	
0	Toxscan	Toxscan	FB MS	Antimony (Sb)	24.8		ug/L	EPA 200.8	96.4
0	Toxscan	Toxscan	FB MS	Arsenic (As)	26.2		ug/L	EPA 200.8	105
0	Toxscan	Toxscan	FB MS	Barium (Ba)	26.8		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB MS	Beryllium (Be)	25.9		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB MS	Cadmium (Cd)	25.2		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB MS	Chromium (Cr)	27.9		ug/L	EPA 200.8	106
0	Toxscan	Toxscan	FB MS	Cobalt (Co)	25.9		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB MS	Copper (Cu)	46.3		ug/L	EPA 200.8	105
0	Toxscan	Toxscan	FB MS	Lead (Pb)	26		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB MS	Mercury (Hg)	59	5	ng/L	EPA 245.7	97.4
0	Toxscan	Toxscan	FB MS	Molybdenum (Mo)	25		ug/L	EPA 200.8	99.4
0	Toxscan	Toxscan	FB MS	Nickel (Ni)	27.1		ug/L	EPA 200.8	105
0	Toxscan	Toxscan	FB MS	Selenium (Se)	25		ug/L	EPA 200.8	100

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
0	Toxscan	Toxscan	FB MS	Silver (Ag)	26.8		ug/L	EPA 200.8	107
0	Toxscan	Toxscan	FB MS	Thallium (Tl)	25.8		ug/L	EPA 200.8	103
0	Toxscan	Toxscan	FB MS	Vanadium (V)	26		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB MS	Zinc (Zn)	473		ug/L	EPA 200.8	90.4
0	Toxscan	Toxscan	FB MSD	Antimony (Sb)	24.9		ug/L	EPA 200.8	96.8
0	Toxscan	Toxscan	FB MSD	Arsenic (As)	26		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB MSD	Barium (Ba)	26.9		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB MSD	Beryllium (Be)	26.6		ug/L	EPA 200.8	106
0	Toxscan	Toxscan	FB MSD	Cadmium (Cd)	24.7		ug/L	EPA 200.8	98.8
0	Toxscan	Toxscan	FB MSD	Chromium (Cr)	28		ug/L	EPA 200.8	107
0	Toxscan	Toxscan	FB MSD	Cobalt (Co)	25.9		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB MSD	Copper (Cu)	46.9		ug/L	EPA 200.8	108
0	Toxscan	Toxscan	FB MSD	Lead (Pb)	26		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB MSD	Mercury (Hg)	61	5	ng/L	EPA 245.7	101
0	Toxscan	Toxscan	FB MSD	Molybdenum (Mo)	24.9		ug/L	EPA 200.8	99
0	Toxscan	Toxscan	FB MSD	Nickel (Ni)	27		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB MSD	Selenium (Se)	25.1		ug/L	EPA 200.8	100
0	Toxscan	Toxscan	FB MSD	Silver (Ag)	27		ug/L	EPA 200.8	108
0	Toxscan	Toxscan	FB MSD	Thallium (Tl)	26.3		ug/L	EPA 200.8	105
0	Toxscan	Toxscan	FB MSD	Vanadium (V)	25.9		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB MSD	Zinc (Zn)	466		ug/L	EPA 200.8	84.8
0	Toxscan	Toxscan	FB SRM	Antimony (Sb)	37.4		ug/L	EPA 200.8	105
0	Toxscan	Toxscan	FB SRM	Antimony (Sb)	36.3		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB SRM	Arsenic (As)	87.7		ug/L	EPA 200.8	96.6
0	Toxscan	Toxscan	FB SRM	Arsenic (As)	91.8		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB SRM	Barium (Ba)	897		ug/L	EPA 200.8	98.6
0	Toxscan	Toxscan	FB SRM	Barium (Ba)	928		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB SRM	Beryllium (Be)	6		ug/L	EPA 200.8	94.6
0	Toxscan	Toxscan	FB SRM	Beryllium (Be)	6.16		ug/L	EPA 200.8	97.2
0	Toxscan	Toxscan	FB SRM	Cadmium (Cd)	28.6		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB SRM	Cadmium (Cd)	28.9		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB SRM	Chromium (Cr)	139		ug/L	EPA 200.8	103
0	Toxscan	Toxscan	FB SRM	Chromium (Cr)	139		ug/L	EPA 200.8	103
0	Toxscan	Toxscan	FB SRM	Copper (Cu)	1640		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB SRM	Copper (Cu)	1660		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB SRM	Lead (Pb)	89		ug/L	EPA 200.8	103
0	Toxscan	Toxscan	FB SRM	Lead (Pb)	86.9		ug/L	EPA 200.8	101
0	Toxscan	Toxscan	FB SRM	Mercury (Hg)	100	5	ng/L	EPA 245.7	86.2
0	Toxscan	Toxscan	FB SRM	Molybdenum (Mo)	86.4		ug/L	EPA 200.8	98.5
0	Toxscan	Toxscan	FB SRM	Molybdenum (Mo)	84.7		ug/L	EPA 200.8	96.6

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
0	Toxscan	Toxscan	FB SRM	Nickel (Ni)	341		ug/L	EPA 200.8	96.3
0	Toxscan	Toxscan	FB SRM	Nickel (Ni)	350		ug/L	EPA 200.8	98.9
0	Toxscan	Toxscan	FB SRM	Selenium (Se)	80		ug/L	EPA 200.8	106
0	Toxscan	Toxscan	FB SRM	Selenium (Se)	77.4		ug/L	EPA 200.8	103
0	Toxscan	Toxscan	FB SRM	Silver (Ag)	264		ug/L	EPA 200.8	103
0	Toxscan	Toxscan	FB SRM	Silver (Ag)	268		ug/L	EPA 200.8	105
0	Toxscan	Toxscan	FB SRM	Thallium (Tl)	5.22		ug/L	EPA 200.8	104
0	Toxscan	Toxscan	FB SRM	Thallium (Tl)	5.44		ug/L	EPA 200.8	109
0	Toxscan	Toxscan	FB SRM	Vanadium (V)	75.7		ug/L	EPA 200.8	9.58
0	Toxscan	Toxscan	FB SRM	Vanadium (V)	74.1		ug/L	EPA 200.8	9.38
0	Toxscan	Toxscan	FB SRM	Zinc (Zn)	1670		ug/L	EPA 200.8	102
0	Toxscan	Toxscan	FB SRM	Zinc (Zn)	1670		ug/L	EPA 200.8	102
10	SM-380-4.8-WB	Toxscan	FD	Antimony (Sb)	1.79	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Arsenic (As)	2.8	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Barium (Ba)	199	0.5	mg/kg	EPA 6020	
10	SM-380-4.8-WB	McCampbell Analytical	FD	Benzene	<0.005	0.005	ug/L	SW 8015Cm	
10	SM-380-4.8-WB	Toxscan	FD	Beryllium (Be)	0.22	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Cadmium (Cd)	0.753	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Chromium (Cr)	53.7	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Cobalt (Co)	11.1	0.5	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Copper (Cu)	70.5	0.5	mg/kg	EPA 6020	
10	SM-380-4.8-WB	McCampbell Analytical	FD	Ethylbenzene	<0.005	0.005	ug/L	SW 8015Cm	
10	SM-380-4.8-WB	Toxscan	FD	Lead (Pb)	112	0.5	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Mercury (Hg)	0.156	0.02	mg/kg	EPA 7471A	
10	SM-380-4.8-WB	Toxscan	FD	Molybdenum (Mo)	4.77	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Nickel (Ni)	31.7	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Selenium (Se)	0.182	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Silver (Ag)	0.105	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	Toxscan	FD	Thallium (Tl)	<0.5	0.5	mg/kg	EPA 6020	
10	SM-380-4.8-WB	McCampbell Analytical	FD	Toluene	<0.005	0.005	ug/L	SW 8015Cm	
10	SM-380-4.8-WB	Toxscan	FD	TPH-Diesel Range Organics	54	50	mg/kg	EPA 8015B	
10	SM-380-4.8-WB	Toxscan	FD	TPH-Waste Oil	1100	100	mg/kg	EPA 8015B	
10	SM-380-4.8-WB	Toxscan	FD	Vanadium (V)	53.1	0.1	mg/kg	EPA 6020	
10	SM-380-4.8-WB	McCampbell Analytical	FD	Xylenes	<0.005	0.005	ug/L	SW 8015Cm	
10	SM-380-4.8-WB	Toxscan	FD	Zinc (Zn)	445	5	mg/kg	EPA 6020	
0	Toxscan	Toxscan	LCS	Antimony (Sb)	55.9	0.1	mg/kg	EPA 3050	112
0	Toxscan	Toxscan	LCS	Arsenic (As)	4.93	0.1	mg/kg	EPA 3050	98.6
0	Toxscan	Toxscan	LCS	Arsenic (As)	5.34	0.5	mg/kg	EPA 3050	107
0	Toxscan	Toxscan	LCS	Barium (Ba)	253	0.1	mg/kg	EPA 3050	101
0	Toxscan	Toxscan	LCS	Barium (Ba)	265	0.5	mg/kg	EPA 3050	106

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
0	Toxscan	McCampbell Analytical	LCS	Benzene				SW 8015Cm	98.5
16	Toxscan	McCampbell Analytical	LCS	Benzene				SW 8015Cm	110
0	Toxscan	McCampbell Analytical	LCS	Benzene				SW 8015Cm	97.7
0	Toxscan	Toxscan	LCS	Cadmium (Cd)	5.23	0.1	mg/kg	EPA 3050	105
0	Toxscan	Toxscan	LCS	Cadmium (Cd)	5.09	0.5	mg/kg	EPA 3050	102
0	Toxscan	Toxscan	LCS	Chromium (Cr)	51.5	0.1	mg/kg	EPA 3050	103
0	Toxscan	Toxscan	LCS	Chromium (Cr)	49.4	0.5	mg/kg	EPA 3050	98.8
0	Toxscan	Toxscan	LCS	Cobalt (Co)	50.8	0.1	mg/kg	EPA 3050	102
0	Toxscan	Toxscan	LCS	Cobalt (Co)	52.4	0.5	mg/kg	EPA 3050	105
0	Toxscan	Toxscan	LCS	Copper (Cu)	49.9	0.1	mg/kg	EPA 3050	99.8
0	Toxscan	Toxscan	LCS	Copper (Cu)	49.8	0.5	mg/kg	EPA 3050	99.6
0	Toxscan	McCampbell Analytical	LCS	Ethylbenzene				SW 8015Cm	98.1
16	Toxscan	McCampbell Analytical	LCS	Ethylbenzene				SW 8015Cm	106
0	Toxscan	McCampbell Analytical	LCS	Ethylbenzene				SW 8015Cm	102
0	Toxscan	Toxscan	LCS	Lead (Pb)	24.4	0.1	mg/kg	EPA 3050	97.6
0	Toxscan	Toxscan	LCS	Lead (Pb)	26.4	0.5	mg/kg	EPA 3050	106
0	Toxscan	Toxscan	LCS	Molybdenum (Mo)	51.8	0.1	mg/kg	EPA 3050	104
0	Toxscan	Toxscan	LCS	Molybdenum (Mo)	51.5	0.5	mg/kg	EPA 3050	103
0	Toxscan	Toxscan	LCS	Nickel (Ni)	49	0.1	mg/kg	EPA 3050	98
0	Toxscan	Toxscan	LCS	Nickel (Ni)	46.7	0.5	mg/kg	EPA 3050	93.4
0	Toxscan	Toxscan	LCS	Selenium (Se)	2.41	0.1	mg/kg	EPA 3050	96.4
0	Toxscan	Toxscan	LCS	Silver (Ag)	5.02	0.5	mg/kg	EPA 3050	100
0	Toxscan	Toxscan	LCS	Silver (Ag)	5.22	0.1	mg/kg	EPA 3050	104
0	Toxscan	Toxscan	LCS	Thallium (Tl)	50.4	0.1	mg/kg	EPA 3050	101
0	Toxscan	Toxscan	LCS	Thallium (Tl)	49.9	0.5	mg/kg	EPA 3050	99.8
16	Toxscan	McCampbell Analytical	LCS	Toluene				SW 8015Cm	109
0	Toxscan	McCampbell Analytical	LCS	Toluene				SW 8015Cm	100
0	Toxscan	McCampbell Analytical	LCS	Toluene				SW 8015Cm	97.8
0	Toxscan	Toxscan	LCS	TPH-Diesel Range Organics	25.5	10	mg/kg	EPA 3550B	68
0	Toxscan	Toxscan	LCS	Vanadium (V)	47.6	0.5	mg/kg	EPA 3050	95.2
0	Toxscan	Toxscan	LCS	Vanadium (V)	51.8	0.1	mg/kg	EPA 3050	104
0	Toxscan	McCampbell Analytical	LCS	Xylenes				SW 8015Cm	103
0	Toxscan	McCampbell Analytical	LCS	Xylenes				SW 8015Cm	100
16	Toxscan	McCampbell Analytical	LCS	Xylenes				SW 8015Cm	107
0	Toxscan	Toxscan	LCS	Zinc (Zn)	46.9	1	mg/kg	EPA 3050	93.8
0	Toxscan	McCampbell Analytical	LCSD	Benzene				SW 8015Cm	97.7
16	Toxscan	McCampbell Analytical	LCSD	Benzene				SW 8015Cm	101
0	Toxscan	McCampbell Analytical	LCSD	Benzene				SW 8015Cm	95.8
16	Toxscan	McCampbell Analytical	LCSD	Ethylbenzene				SW 8015Cm	101
0	Toxscan	McCampbell Analytical	LCSD	Ethylbenzene				SW 8015Cm	95.9

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
0	Toxscan	McCampbell Analytical	LCSD	Ethylbenzene				SW 8015Cm	102
0	Toxscan	McCampbell Analytical	LCSD	Toluene				SW 8015Cm	100
0	Toxscan	McCampbell Analytical	LCSD	Toluene				SW 8015Cm	95.7
16	Toxscan	McCampbell Analytical	LCSD	Toluene				SW 8015Cm	103
0	Toxscan	McCampbell Analytical	LCSD	Xylenes				SW 8015Cm	103
16	Toxscan	McCampbell Analytical	LCSD	Xylenes				SW 8015Cm	103
0	Toxscan	McCampbell Analytical	LCSD	Xylenes				SW 8015Cm	99.3
16	SCL-101-34.8-NB	Toxscan	LD	Antimony (Sb)	1.81	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Antimony (Sb)	2.46	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Arsenic (As)	2.13	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Arsenic (As)	2.62	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Barium (Ba)	125	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Barium (Ba)	136	1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Barium (Ba)	150	0.5	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Barium (Ba)	138	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Beryllium (Be)	<1	1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Beryllium (Be)	<0.5	0.5	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	McCampbell Analytical	LD	Benzene	<0.005	0.005	mg/kg	SW 8015Cm	
16	SCL-101-34.8-NB	Toxscan	LD	Cadmium (Cd)	0.442	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Cadmium (Cd)	0.851	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Chromium (Cr)	44.5	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Chromium (Cr)	51.1	1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Chromium (Cr)	73.8	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Chromium (Cr)	82.9	0.5	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Cobalt (Co)	11	1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Cobalt (Co)	7.49	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Cobalt (Co)	7.87	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Cobalt (Co)	11.1	0.25	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Cobalt (Co)	8.59	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Cobalt (Co)	11.5	0.5	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Copper (Cu)	19.6	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Copper (Cu)	26.4	1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Copper (Cu)	55.5	0.5	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Copper (Cu)	52	0.25	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	McCampbell Analytical	LD	Ethylbenzene	<0.005	0.005	mg/kg	SW 8015Cm	
16	SCL-101-34.8-NB	Toxscan	LD	Lead (Pb)	249	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Lead (Pb)	217	1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Lead (Pb)	271	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Lead (Pb)	100	0.5	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Lead (Pb)	97.4	0.25	mg/kg	EPA 3050	

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
13	ALA-880-20.8-NB	Toxscan	LD	Lead (Pb)	122	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Molybdenum (Mo)	2.23	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Molybdenum (Mo)	2.24	1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Molybdenum (Mo)	2.62	0.5	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Molybdenum (Mo)	2.62	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Nickel (Ni)	46.1	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Nickel (Ni)	65.2	1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Nickel (Ni)	42.8	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Nickel (Ni)	60.7	0.5	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Selenium (Se)	1.03	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Selenium (Se)	0.301	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Silver (Ag)	0.123	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Silver (Ag)	0.101	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Thallium (Tl)	<0.1	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Thallium (Tl)	<0.1	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Thallium (Tl)	<1	1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Thallium (Tl)	0.113	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Thallium (Tl)	<0.5	0.5	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Thallium (Tl)	<0.25	0.25	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	McCampbell Analytical	LD	Toluene	<0.005	0.005	mg/kg	SW 8015Cm	
13	ALA-880-20.8-NB	Toxscan	LD	TPH-Diesel Range Organics	53.5	50	mg/kg	EPA 3550B	
13	ALA-880-20.8-NB	Toxscan	LD	TPH-Waste Oil	897	100	mg/kg	EPA 3550B	
16	SCL-101-34.8-NB	Toxscan	LD	Vanadium (V)	49.8	1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Vanadium (V)	48.7	0.1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Vanadium (V)	46.5	0.5	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Vanadium (V)	46.3	0.1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Zinc (Zn)	233	1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Zinc (Zn)	329	10	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	LD	Zinc (Zn)	229	1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Zinc (Zn)	591	2.5	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Zinc (Zn)	627	5	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	Toxscan	LD	Zinc (Zn)	448	1	mg/kg	EPA 3050	
13	ALA-880-20.8-NB	McCampbell Analytical	LD	Xylenes	<0.005	0.005	mg/kg	SW 8015Cm	
0	Toxscan	Toxscan	MB	Antimony (Sb)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Arsenic (As)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Barium (Ba)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Beryllium (Be)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Cadmium (Cd)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Chromium (Cr)	0.101	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Cobalt (Co)	<0.1	0.1	mg/kg	EPA 3050	

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
0	Toxscan	Toxscan	MB	Copper (Cu)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Lead (Pb)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Mercury (Hg)	<0.2	0.2	mg/kg	EPA 7471A	
0	Toxscan	Toxscan	MB	Molybdenum (Mo)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Nickel (Ni)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Selenium (Se)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Silver (Ag)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Thallium (Tl)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	TPH-Diesel Range Organics	<10	10	mg/kg	EPA 3550B	
0	Toxscan	Toxscan	MB	TPH-Waste Oil	<20	20	mg/kg	EPA 3550B	
0	Toxscan	Toxscan	MB	Vanadium (V)	<0.1	0.1	mg/kg	EPA 3050	
0	Toxscan	Toxscan	MB	Zinc (Zn)	<1	1	mg/kg	EPA 3050	
16	SCL-101-34.8-NB	Toxscan	MS	Antimony (Sb)	62.5	0.1	mg/kg	EPA 3050	121
16	SCL-101-34.8-NB	Toxscan	MS	Arsenic (As)	6.16	0.1	mg/kg	EPA 3050	80.4
16	SCL-101-34.8-NB	Toxscan	MS	Barium (Ba)	385	1	mg/kg	EPA 3050	99.6
16	SCL-101-34.8-NB	Toxscan	MS	Barium (Ba)	435	0.1	mg/kg	EPA 3050	120
0	Toxscan	McCampbell Analytical	MS	Benzene				SW 8015Cm	99.4
0	Toxscan	McCampbell Analytical	MS	Benzene				SW 8015Cm	99.7
16	Toxscan	McCampbell Analytical	MS	Benzene				SW 8015Cm	90
16	SCL-101-34.8-NB	Toxscan	MS	Beryllium (Be)	4.68	1	mg/kg	EPA 3050	93.6
16	SCL-101-34.8-NB	Toxscan	MS	Cadmium (Cd)	5.59	0.1	mg/kg	EPA 3050	103
16	SCL-101-34.8-NB	Toxscan	MS	Chromium (Cr)	87.4	0.1	mg/kg	EPA 3050	85.2
16	SCL-101-34.8-NB	Toxscan	MS	Chromium (Cr)	95.2	1	mg/kg	EPA 3050	87.2
16	SCL-101-34.8-NB	Toxscan	MS	Cobalt (Co)	56.9	1	mg/kg	EPA 3050	91.4
16	SCL-101-34.8-NB	Toxscan	MS	Cobalt (Co)	50.7	0.1	mg/kg	EPA 3050	85.4
16	SCL-101-34.8-NB	Toxscan	MS	Cobalt (Co)	44.5	0.1	mg/kg	EPA 3050	74.3
16	SCL-101-34.8-NB	Toxscan	MS	Copper (Cu)	61.6	0.1	mg/kg	EPA 3050	84.8
16	SCL-101-34.8-NB	Toxscan	MS	Copper (Cu)	72.2	1	mg/kg	EPA 3050	91.2
16	Toxscan	McCampbell Analytical	MS	Ethylbenzene				SW 8015Cm	91.3
0	Toxscan	McCampbell Analytical	MS	Ethylbenzene				SW 8015Cm	104
0	Toxscan	McCampbell Analytical	MS	Ethylbenzene				SW 8015Cm	96.5
16	SCL-101-34.8-NB	Toxscan	MS	Lead (Pb)	242	1	mg/kg	EPA 3050	96
1	SON-101-3.66-SB	Toxscan	MS	Mercury (Hg)	0.596	0.2	mg/kg	EPA 7471A	103
16	SCL-101-34.8-NB	Toxscan	MS	Molybdenum (Mo)	52.3	0.1	mg/kg	EPA 3050	100
16	SCL-101-34.8-NB	Toxscan	MS	Molybdenum (Mo)	50.6	1	mg/kg	EPA 3050	96.8
16	SCL-101-34.8-NB	Toxscan	MS	Nickel (Ni)	89.1	0.1	mg/kg	EPA 3050	84.6
16	SCL-101-34.8-NB	Toxscan	MS	Nickel (Ni)	110	1	mg/kg	EPA 3050	88.6
16	SCL-101-34.8-NB	Toxscan	MS	Selenium (Se)	3.21	0.1	mg/kg	EPA 3050	85.2
16	SCL-101-34.8-NB	Toxscan	MS	Silver (Ag)	4.84	0.1	mg/kg	EPA 3050	94.3
16	SCL-101-34.8-NB	Toxscan	MS	Thallium (Tl)	45.4	1	mg/kg	EPA 3050	90.8

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
16	SCL-101-34.8-NB	Toxscan	MS	Thallium (Tl)	64.1	0.1	mg/kg	EPA 3050	128
16	SCL-101-34.8-NB	Toxscan	MS	Thallium (Tl)	49.3	0.1	mg/kg	EPA 3050	98.6
0	Toxscan	McCampbell Analytical	MS	Toluene				SW 8015Cm	100
16	Toxscan	McCampbell Analytical	MS	Toluene				SW 8015Cm	77.8
0	Toxscan	McCampbell Analytical	MS	Toluene				SW 8015Cm	102
16	Toxscan	Toxscan	MS	TPH-Diesel Range Organics	205	50	mg/kg	EPA 3550B	NR
16	SCL-101-34.8-NB	Toxscan	MS	Vanadium (V)	94.8	0.1	mg/kg	EPA 3050	91
16	SCL-101-34.8-NB	Toxscan	MS	Vanadium (V)	92.9	1	mg/kg	EPA 3050	86
0	Toxscan	McCampbell Analytical	MS	Xylenes				SW 8015Cm	107
16	Toxscan	McCampbell Analytical	MS	Xylenes				SW 8015Cm	94
0	Toxscan	McCampbell Analytical	MS	Xylenes				SW 8015Cm	105
16	SCL-101-34.8-NB	Toxscan	MS	Zinc (Zn)	280	1	mg/kg	EPA 3050	94
16	SCL-101-34.8-NB	Toxscan	MS	Zinc (Zn)	356	10	mg/kg	EPA 3050	80
16	SCL-101-34.8-NB	Toxscan	MS	Zinc (Zn)	286	1	mg/kg	EPA 3050	112
16	SCL-101-34.8-NB	Toxscan	MSD	Antimony (Sb)	63.1	0.1	mg/kg	EPA 3050	123
16	SCL-101-34.8-NB	Toxscan	MSD	Arsenic (As)	6.22	0.1	mg/kg	EPA 3050	81.6
16	SCL-101-34.8-NB	Toxscan	MSD	Barium (Ba)	383	1	mg/kg	EPA 3050	98.8
16	SCL-101-34.8-NB	Toxscan	MSD	Barium (Ba)	437	0.1	mg/kg	EPA 3050	120
0	Toxscan	McCampbell Analytical	MSD	Benzene				SW 8015Cm	97.6
16	Toxscan	McCampbell Analytical	MSD	Benzene				SW 8015Cm	94.1
0	Toxscan	McCampbell Analytical	MSD	Benzene				SW 8015Cm	100
16	SCL-101-34.8-NB	Toxscan	MSD	Beryllium (Be)	4.8	1	mg/kg	EPA 3050	96
16	SCL-101-34.8-NB	Toxscan	MSD	Cadmium (Cd)	5.56	0.1	mg/kg	EPA 3050	102
16	SCL-101-34.8-NB	Toxscan	MSD	Chromium (Cr)	94.4	1	mg/kg	EPA 3050	85.6
16	SCL-101-34.8-NB	Toxscan	MSD	Chromium (Cr)	87.8	0.1	mg/kg	EPA 3050	86
16	SCL-101-34.8-NB	Toxscan	MSD	Cobalt (Co)	56.4	1	mg/kg	EPA 3050	90.4
16	SCL-101-34.8-NB	Toxscan	MSD	Cobalt (Co)	44	0.1	mg/kg	EPA 3050	73.3
16	SCL-101-34.8-NB	Toxscan	MSD	Cobalt (Co)	51	0.1	mg/kg	EPA 3050	86
16	SCL-101-34.8-NB	Toxscan	MSD	Copper (Cu)	71.5	1	mg/kg	EPA 3050	89.8
16	SCL-101-34.8-NB	Toxscan	MSD	Copper (Cu)	61.8	0.1	mg/kg	EPA 3050	85.2
16	Toxscan	McCampbell Analytical	MSD	Ethylbenzene				SW 8015Cm	94.2
0	Toxscan	McCampbell Analytical	MSD	Ethylbenzene				SW 8015Cm	96.6
0	Toxscan	McCampbell Analytical	MSD	Ethylbenzene				SW 8015Cm	102
16	SCL-101-34.8-NB	Toxscan	MSD	Lead (Pb)	236	1	mg/kg	EPA 3050	72
1	SON-101-3.66-SB	Toxscan	MSD	Mercury (Hg)	0.586	0.2	mg/kg	EPA 7471A	101
16	SCL-101-34.8-NB	Toxscan	MSD	Molybdenum (Mo)	52.7	0.1	mg/kg	EPA 3050	101
16	SCL-101-34.8-NB	Toxscan	MSD	Molybdenum (Mo)	50	1	mg/kg	EPA 3050	95.6
16	SCL-101-34.8-NB	Toxscan	MSD	Nickel (Ni)	89.2	0.1	mg/kg	EPA 3050	84.8
16	SCL-101-34.8-NB	Toxscan	MSD	Nickel (Ni)	108	1	mg/kg	EPA 3050	84.6
16	SCL-101-34.8-NB	Toxscan	MSD	Selenium (Se)	3.22	0.1	mg/kg	EPA 3050	85.6

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
16	SCL-101-34.8-NB	Toxscan	MSD	Silver (Ag)	4.85	0.1	mg/kg	EPA 3050	94.5
16	SCL-101-34.8-NB	Toxscan	MSD	Thallium (Tl)	63.9	0.1	mg/kg	EPA 3050	128
16	SCL-101-34.8-NB	Toxscan	MSD	Thallium (Tl)	44.8	1	mg/kg	EPA 3050	89.6
16	SCL-101-34.8-NB	Toxscan	MSD	Thallium (Tl)	48.8	0.1	mg/kg	EPA 3050	97.6
16	Toxscan	McCampbell Analytical	MSD	Toluene				SW 8015Cm	80.4
0	Toxscan	McCampbell Analytical	MSD	Toluene				SW 8015Cm	99.5
0	Toxscan	McCampbell Analytical	MSD	Toluene				SW 8015Cm	102
16	Toxscan	Toxscan	MSD	TPH-Diesel Range Organics	182	50	mg/kg	EPA 3550B	NR
16	SCL-101-34.8-NB	Toxscan	MSD	Vanadium (V)	92.1	1	mg/kg	EPA 3050	84.4
16	SCL-101-34.8-NB	Toxscan	MSD	Vanadium (V)	95.6	0.1	mg/kg	EPA 3050	92.6
16	Toxscan	McCampbell Analytical	MSD	Xylenes				SW 8015Cm	95.3
0	Toxscan	McCampbell Analytical	MSD	Xylenes				SW 8015Cm	105
0	Toxscan	McCampbell Analytical	MSD	Xylenes				SW 8015Cm	103
16	SCL-101-34.8-NB	Toxscan	MSD	Zinc (Zn)	284	1	mg/kg	EPA 3050	108
16	SCL-101-34.8-NB	Toxscan	MSD	Zinc (Zn)	352	10	mg/kg	EPA 3050	72
16	SCL-101-34.8-NB	Toxscan	MSD	Zinc (Zn)	280	1	mg/kg	EPA 3050	94
0	Toxscan	Toxscan	SRM	Antimony (Sb)	1.01	0.1	mg/kg	EPA 3050	99
0	Toxscan	Toxscan	SRM	Antimony (Sb)	1.11	0.25	mg/kg	EPA 3050	109
0	Toxscan	Toxscan	SRM	Antimony (Sb)	1.07	0.25	mg/kg	EPA 3050	105
0	Toxscan	Toxscan	SRM	Antimony (Sb)	0.907	0.1	mg/kg	EPA 3050	88.9
0	Toxscan	Toxscan	SRM	Antimony (Sb)	1.04	0.1	mg/kg	EPA 3050	102
0	Toxscan	Toxscan	SRM	Antimony (Sb)	1.19	0.25	mg/kg	EPA 3050	117
0	Toxscan	Toxscan	SRM	Arsenic (As)	18	0.25	mg/kg	EPA 3050	84.9
0	Toxscan	Toxscan	SRM	Arsenic (As)	17.4	0.25	mg/kg	EPA 3050	82.1
0	Toxscan	Toxscan	SRM	Arsenic (As)	18.7	0.5	mg/kg	EPA 3050	88.2
0	Toxscan	Toxscan	SRM	Arsenic (As)	15.5	0.1	mg/kg	EPA 3050	73.1
0	Toxscan	Toxscan	SRM	Arsenic (As)	17.3	0.5	mg/kg	EPA 3050	81.6
0	Toxscan	Toxscan	SRM	Arsenic (As)	18.4	0.5	mg/kg	EPA 3050	86.8
0	Toxscan	Toxscan	SRM	Arsenic (As)	15.3	0.1	mg/kg	EPA 3050	72.2
0	Toxscan	Toxscan	SRM	Arsenic (As)	15	0.1	mg/kg	EPA 3050	70.8
0	Toxscan	Toxscan	SRM	Arsenic (As)	18.1	0.25	mg/kg	EPA 3050	85.4
0	Toxscan	Toxscan	SRM	Beryllium (Be)	1.83	0.5	mg/kg	EPA 3050	79.6
0	Toxscan	Toxscan	SRM	Beryllium (Be)	1.71	0.5	mg/kg	EPA 3050	74.3
0	Toxscan	Toxscan	SRM	Beryllium (Be)	1.65	0.5	mg/kg	EPA 3050	71.7
0	Toxscan	Toxscan	SRM	Beryllium (Be)	1.62	0.25	mg/kg	EPA 3050	70.4
0	Toxscan	Toxscan	SRM	Cadmium (Cd)	0.277	0.1	mg/kg	EPA 3050	115
0	Toxscan	Toxscan	SRM	Cadmium (Cd)	<0.5	0.5	mg/kg	EPA 3050	
0	Toxscan	Toxscan	SRM	Cadmium (Cd)	0.298	0.25	mg/kg	EPA 3050	124
0	Toxscan	Toxscan	SRM	Chromium (Cr)	70.5	0.25	mg/kg	EPA 3050	67.1
0	Toxscan	Toxscan	SRM	Chromium (Cr)	69.6	0.25	mg/kg	EPA 3050	66.3

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
0	Toxscan	Toxscan	SRM	Chromium (Cr)	77.6	0.25	mg/kg	EPA 3050	73.9
0	Toxscan	Toxscan	SRM	Cobalt (Co)	12	0.25	mg/kg	EPA 3050	83.3
0	Toxscan	Toxscan	SRM	Cobalt (Co)	11.7	0.5	mg/kg	EPA 3050	81.2
0	Toxscan	Toxscan	SRM	Cobalt (Co)	12.4	0.5	mg/kg	EPA 3050	86.1
0	Toxscan	Toxscan	SRM	Cobalt (Co)	12	0.5	mg/kg	EPA 3050	83.3
0	Toxscan	Toxscan	SRM	Cobalt (Co)	11.8	0.25	mg/kg	EPA 3050	81.9
0	Toxscan	Toxscan	SRM	Cobalt (Co)	11.5	0.25	mg/kg	EPA 3050	79.9
0	Toxscan	Toxscan	SRM	Copper (Cu)	29.5	0.5	mg/kg	EPA 3050	87
0	Toxscan	Toxscan	SRM	Copper (Cu)	28.5	0.25	mg/kg	EPA 3050	84.1
0	Toxscan	Toxscan	SRM	Copper (Cu)	27.4	0.25	mg/kg	EPA 3050	80.8
0	Toxscan	Toxscan	SRM	Copper (Cu)	27.8	0.5	mg/kg	EPA 3050	82
0	Toxscan	Toxscan	SRM	Copper (Cu)	31.2	0.5	mg/kg	EPA 3050	92
0	Toxscan	Toxscan	SRM	Copper (Cu)	24.5	0.1	mg/kg	EPA 3050	72.3
0	Toxscan	Toxscan	SRM	Copper (Cu)	29.2	0.25	mg/kg	EPA 3050	86.1
0	Toxscan	Toxscan	SRM	Lead (Pb)	19.4	0.25	mg/kg	EPA 3050	91.9
0	Toxscan	Toxscan	SRM	Lead (Pb)	18.8	0.5	mg/kg	EPA 3050	89.1
0	Toxscan	Toxscan	SRM	Lead (Pb)	19.6	0.1	mg/kg	EPA 3050	92.9
0	Toxscan	Toxscan	SRM	Lead (Pb)	19.9	0.1	mg/kg	EPA 3050	94.3
0	Toxscan	Toxscan	SRM	Lead (Pb)	20.3	0.25	mg/kg	EPA 3050	96.2
0	Toxscan	Toxscan	SRM	Lead (Pb)	20.2	0.5	mg/kg	EPA 3050	95.7
0	Toxscan	Toxscan	SRM	Mercury (Hg)	0.0838	0.2	mg/kg	EPA 7471A	92.1
0	Toxscan	Toxscan	SRM	Molybdenum (Mo)	2.29	0.5	mg/kg	EPA 3050	82.4
0	Toxscan	Toxscan	SRM	Molybdenum (Mo)	2.27	0.1	mg/kg	EPA 3050	81.7
0	Toxscan	Toxscan	SRM	Molybdenum (Mo)	2.6	0.5	mg/kg	EPA 3050	93.5
0	Toxscan	Toxscan	SRM	Molybdenum (Mo)	2.4	0.1	mg/kg	EPA 3050	86.3
0	Toxscan	Toxscan	SRM	Molybdenum (Mo)	2.33	0.25	mg/kg	EPA 3050	83.8
0	Toxscan	Toxscan	SRM	Molybdenum (Mo)	2.5	0.25	mg/kg	EPA 3050	89.9
0	Toxscan	Toxscan	SRM	Nickel (Ni)	37.8	0.25	mg/kg	EPA 3050	80.6
0	Toxscan	Toxscan	SRM	Nickel (Ni)	40.4	0.5	mg/kg	EPA 3050	86.1
0	Toxscan	Toxscan	SRM	Nickel (Ni)	40	0.5	mg/kg	EPA 3050	85.3
0	Toxscan	Toxscan	SRM	Nickel (Ni)	39.1	0.25	mg/kg	EPA 3050	83.4
0	Toxscan	Toxscan	SRM	Nickel (Ni)	40.4	0.5	mg/kg	EPA 3050	86.1
0	Toxscan	Toxscan	SRM	Nickel (Ni)	36.4	0.25	mg/kg	EPA 3050	77.6
0	Toxscan	Toxscan	SRM	Selenium (Se)	0.757	0.1	mg/kg	EPA 3050	105
0	Toxscan	Toxscan	SRM	Selenium (Se)	0.807	0.1	mg/kg	EPA 3050	112
0	Toxscan	Toxscan	SRM	Selenium (Se)	0.919	0.1	mg/kg	EPA 3050	128
0	Toxscan	Toxscan	SRM	Silver (Ag)	0.196	0.1	mg/kg	EPA 3050	109
0	Toxscan	Toxscan	SRM	Silver (Ag)	0.253	0.1	mg/kg	EPA 3050	141
0	Toxscan	Toxscan	SRM	Silver (Ag)	0.182	0.1	mg/kg	EPA 3050	101
0	Toxscan	Toxscan	SRM	Thallium (Tl)	0.713	0.1	mg/kg	EPA 3050	79.2

CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
0	Toxscan	Toxscan	SRM	Thallium (Tl)	0.862	0.5	mg/kg	EPA 3050	95.8
0	Toxscan	Toxscan	SRM	Thallium (Tl)	0.735	0.5	mg/kg	EPA 3050	81.7
0	Toxscan	Toxscan	SRM	Thallium (Tl)	0.662	0.1	mg/kg	EPA 3050	73.6
0	Toxscan	Toxscan	SRM	Thallium (Tl)	0.755	0.1	mg/kg	EPA 3050	83.9
0	Toxscan	Toxscan	SRM	Thallium (Tl)	0.693	0.25	mg/kg	EPA 3050	77
0	Toxscan	Toxscan	SRM	Thallium (Tl)	0.803	0.25	mg/kg	EPA 3050	89.2
0	Toxscan	Toxscan	SRM	Thallium (Tl)	0.981	0.5	mg/kg	EPA 3050	109
0	Toxscan	Toxscan	SRM	Thallium (Tl)	0.78	0.25	mg/kg	EPA 3050	86.7
0	Toxscan	Toxscan	SRM	Vanadium (V)	200	0.5	mg/kg	EPA 3050	82.3
0	Toxscan	Toxscan	SRM	Vanadium (V)	166	0.5	mg/kg	EPA 3050	68.3
0	Toxscan	Toxscan	SRM	Vanadium (V)	174	0.5	mg/kg	EPA 3050	71.6
0	Toxscan	Toxscan	SRM	Zinc (Zn)	150	1	mg/kg	EPA 3050	94.3
0	Toxscan	Toxscan	SRM	Zinc (Zn)	186	2.5	mg/kg	EPA 3050	117
0	Toxscan	Toxscan	SRM	Zinc (Zn)	201	5	mg/kg	EPA 3050	126
0	Toxscan	Toxscan	SRM	Zinc (Zn)	189	2.5	mg/kg	EPA 3050	119
0	Toxscan	Toxscan	SRM	Zinc (Zn)	154	1	mg/kg	EPA 3050	96.9
0	Toxscan	Toxscan	SRM	Zinc (Zn)	184	2.5	mg/kg	EPA 3050	116
0	Toxscan	Toxscan	SRM	Zinc (Zn)	189	5	mg/kg	EPA 3050	119
0	Toxscan	Toxscan	SRM	Zinc (Zn)	151	1	mg/kg	EPA 3050	95
0	Toxscan	Toxscan	SRM	Zinc (Zn)	195	5	mg/kg	EPA 3050	123
2	SON-116-6.15-WB	Toxscan	SUR	o-Terphenyl				EPA 8015B	145
1	SON-101-3.66-SB	Toxscan	SUR	o-Terphenyl				EPA 8015B	138
3	SOL-80-41.2-WB	Toxscan	SUR	o-Terphenyl				EPA 8015B	115
4	SOL-80-32.6-EB	Toxscan	SUR	o-Terphenyl				EPA 8015B	152
5	SOL-80-23.9-WB	Toxscan	SUR	o-Terphenyl				EPA 8015B	139
6	SOL-12-2.6-EB	Toxscan	SUR	o-Terphenyl				EPA 8015B	139
11	SM-92-13.8-EB	Toxscan	SUR	o-Terphenyl				EPA 8015B	142
10	SM-380-4.8-WB	Toxscan	SUR	o-Terphenyl				EPA 8015B	133
10	SM-380-4.8-WB	Toxscan	SUR	o-Terphenyl				EPA 8015B	126
12	SM-280-6.9-SB	Toxscan	SUR	o-Terphenyl				EPA 8015B	142
17	SCL-85-10.6-SB	Toxscan	SUR	o-Terphenyl				EPA 8015B	138
16	SCL-101-34.8-NB	Toxscan	SUR	o-Terphenyl				EPA 8015B	177
18	SCL-101-0.0-NB	Toxscan	SUR	o-Terphenyl				EPA 8015B	154
8	CC-4-30.0-EB	Toxscan	SUR	o-Terphenyl				EPA 8015B	157
9	CC-24-0.95-WB	Toxscan	SUR	o-Terphenyl				EPA 8015B	175
13	ALA-880-20.8-NB	Toxscan	SUR	o-Terphenyl				EPA 8015B	128
15	ALA-680-7.48-SB	Toxscan	SUR	o-Terphenyl				EPA 8015B	145
14	ALA-580-17.7-WB	Toxscan	SUR	o-Terphenyl				EPA 8015B	128
0	Toxscan	Toxscan	SUR LCS	o-Terphenyl	8.04			EPA 3550B	161
0	Toxscan	Toxscan	SUR LD	o-Terphenyl	7.88			EPA 3550B	158

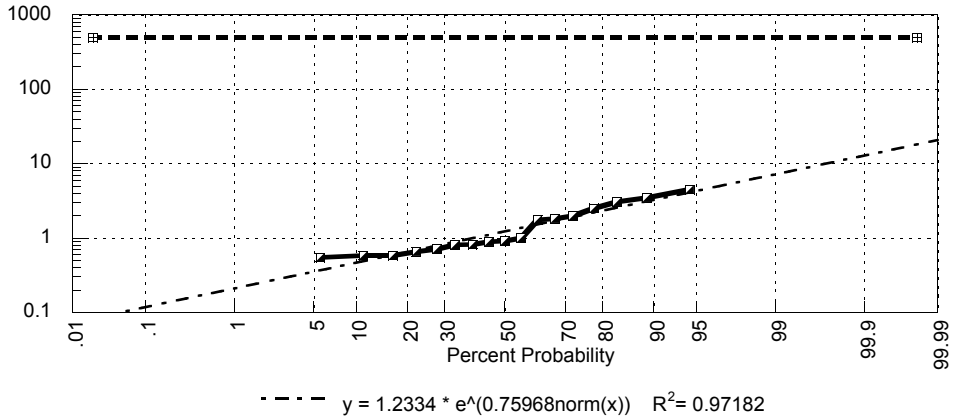
CALTRANS DECANTING WASTE CHARACTERIZATION QA/QC DATA

SITE CODE	SITE	LAB NAME	QA/QC CODE	CONSTITUENT	RESULT	DET LIMIT	UNITS	METHOD	% RECOVERY
0	Toxscan	Toxscan	SUR MB	o-Terphenyl	7.21			EPA 3550B	144
0	Toxscan	Toxscan	SUR MS	o-Terphenyl	9			EPA 3550B	180
0	Toxscan	Toxscan	SUR MSD	o-Terphenyl	8.13			EPA 3550B	163

APPENDIX **E**

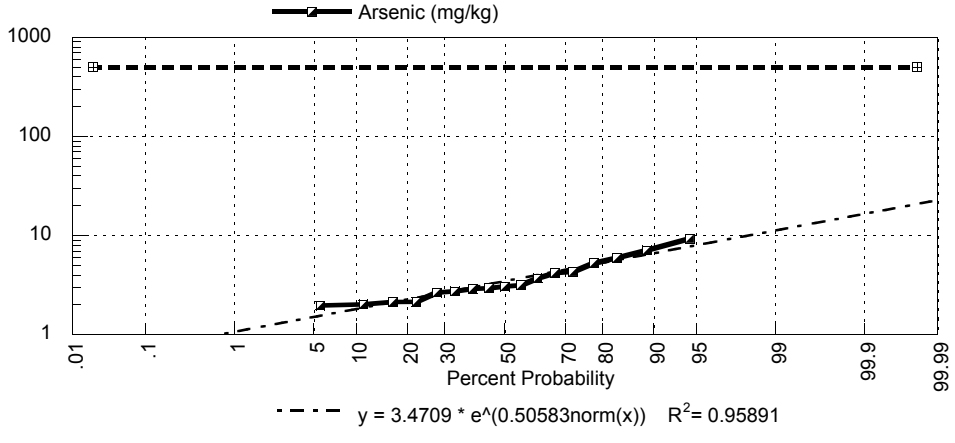
Probability Plots

Antimony



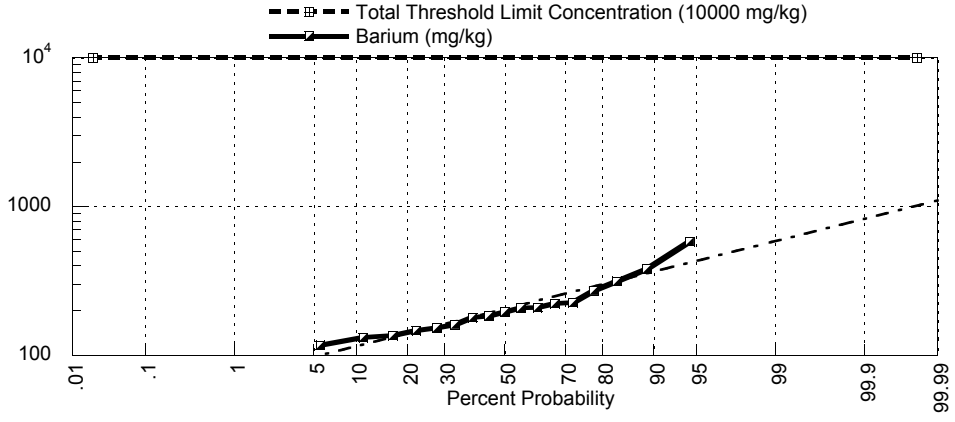
$y = 1.2334 * e^{(0.75968 norm(x))}$ $R^2 = 0.97182$

Arsenic



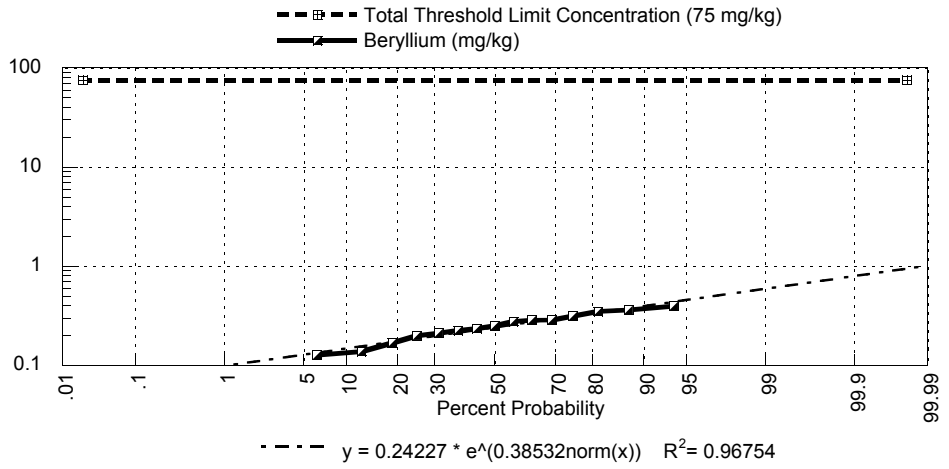
$y = 3.4709 * e^{(0.50583 norm(x))}$ $R^2 = 0.95891$

Barium

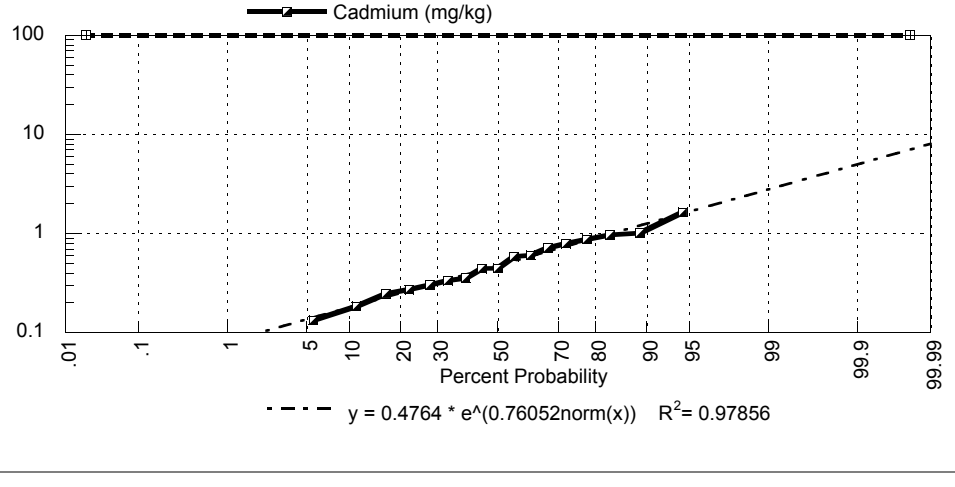


$y = 205.53 * e^{(0.45159 norm(x))}$ $R^2 = 0.88751$

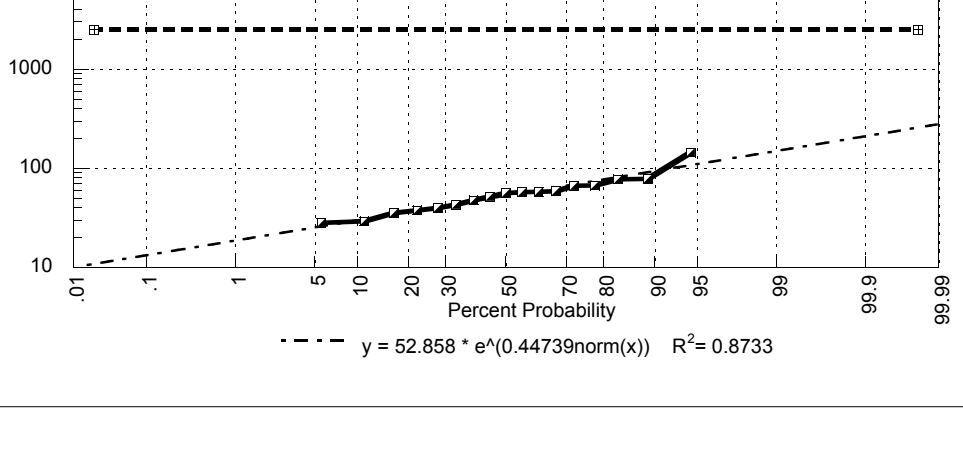
Beryllium



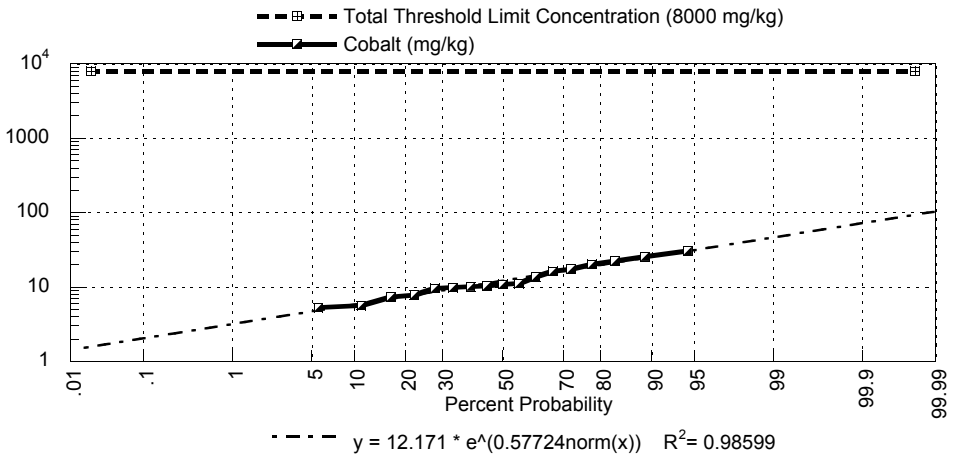
Cadmium



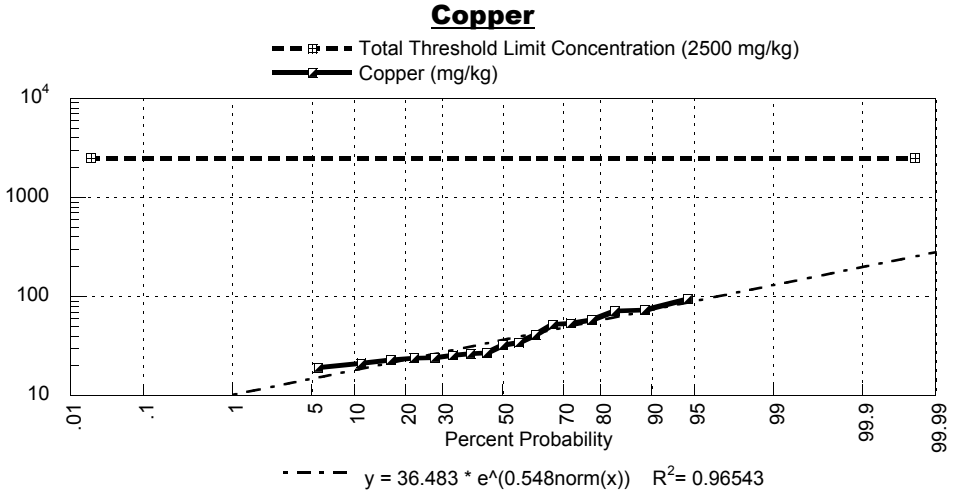
Chromium



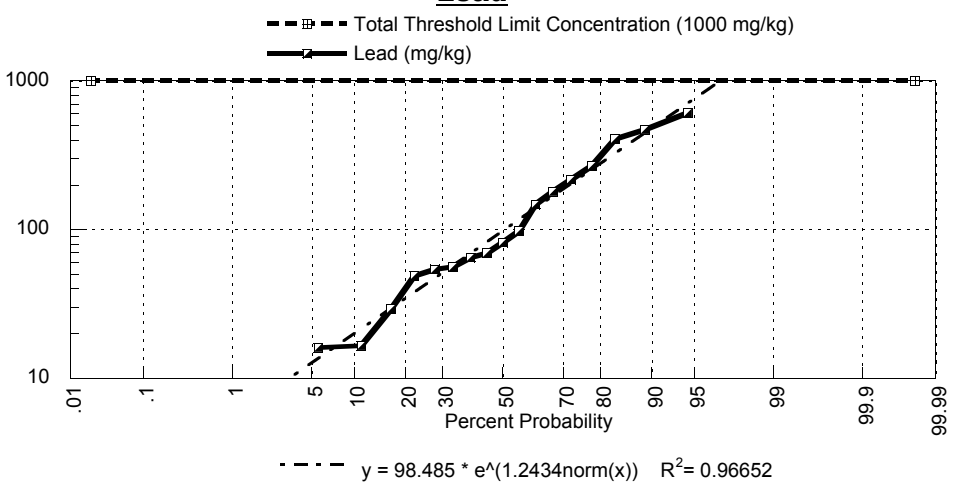
Cobalt



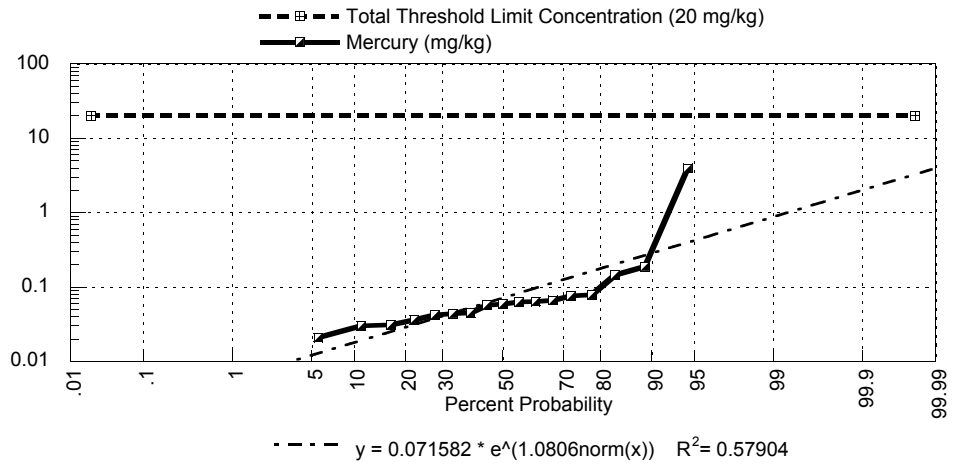
Copper



Lead

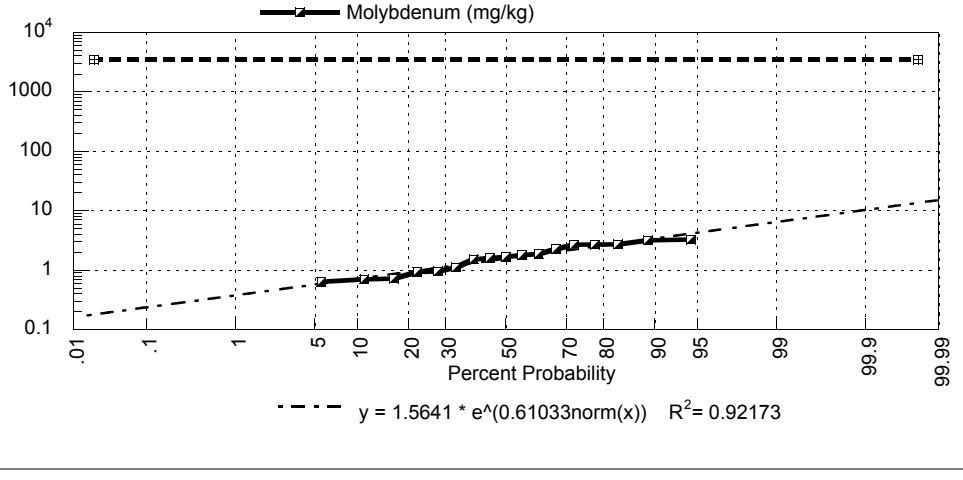


Mercury



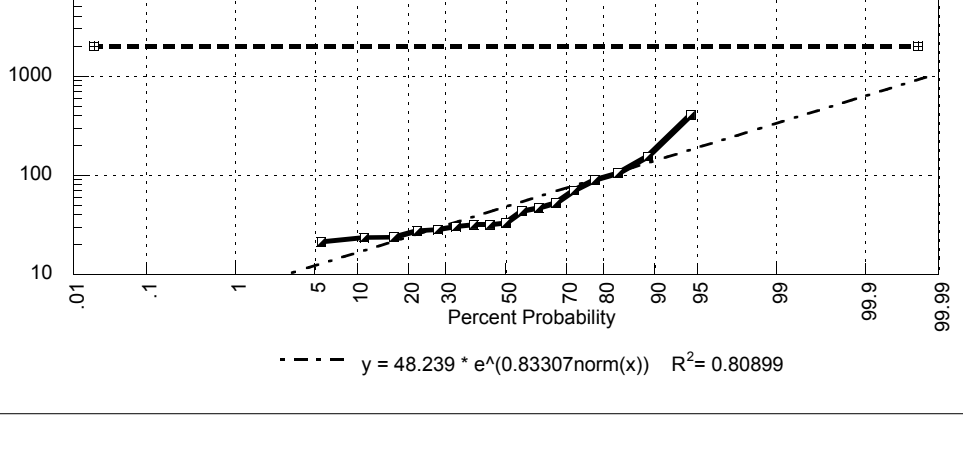
y = 0.071582 * e^(1.0806norm(x)) R^2= 0.57904

Molybdenum



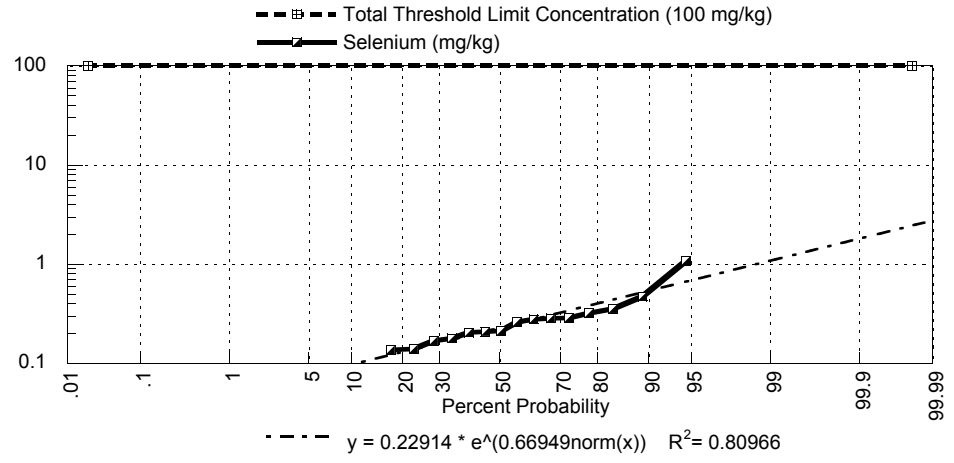
y = 1.5641 * e^(0.61033norm(x)) R^2= 0.92173

Nickel

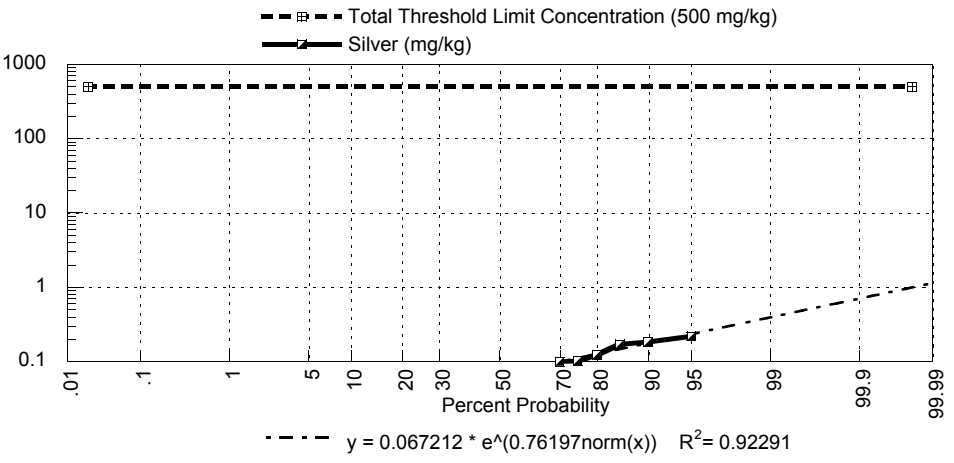


y = 48.239 * e^(0.83307norm(x)) R^2= 0.80899

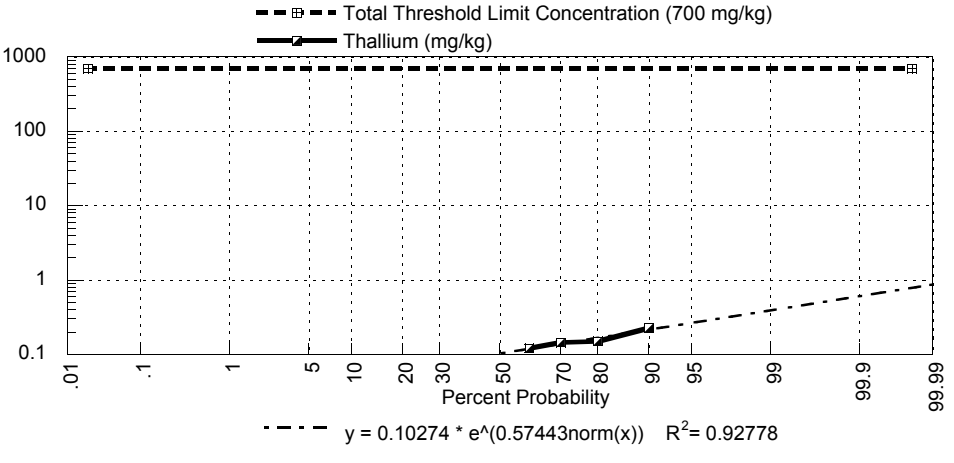
Selenium



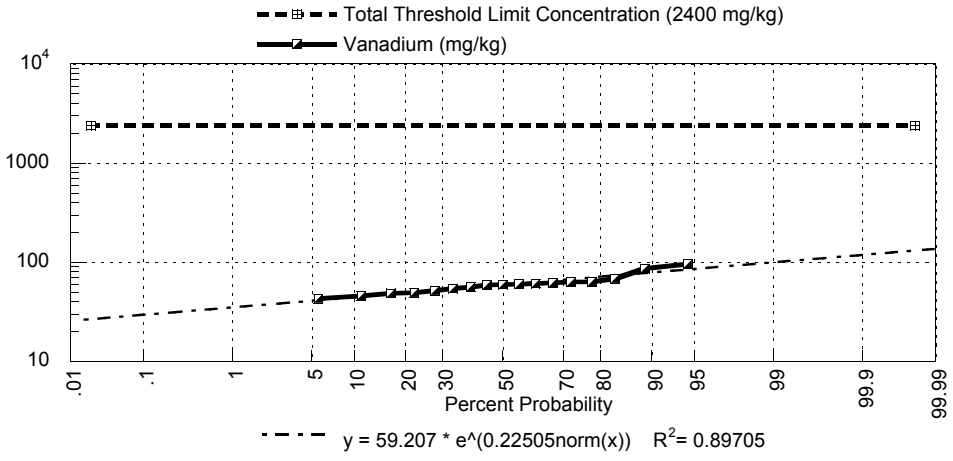
Silver



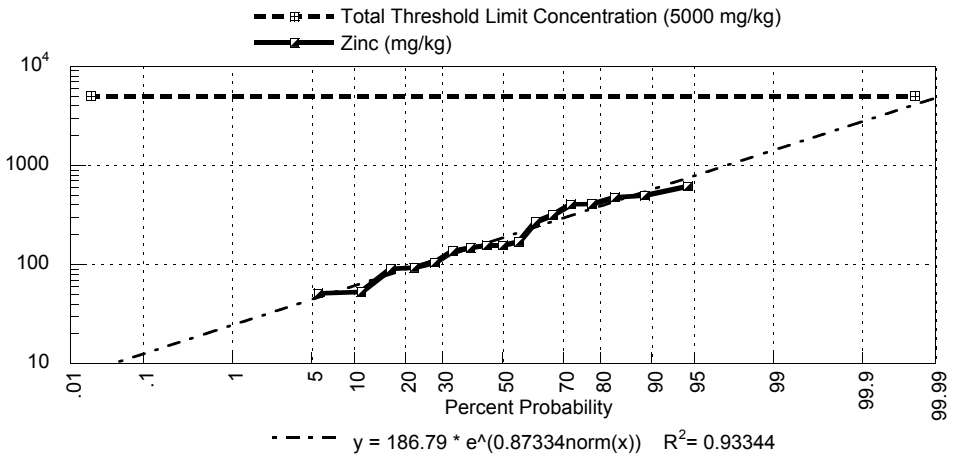
Thallium



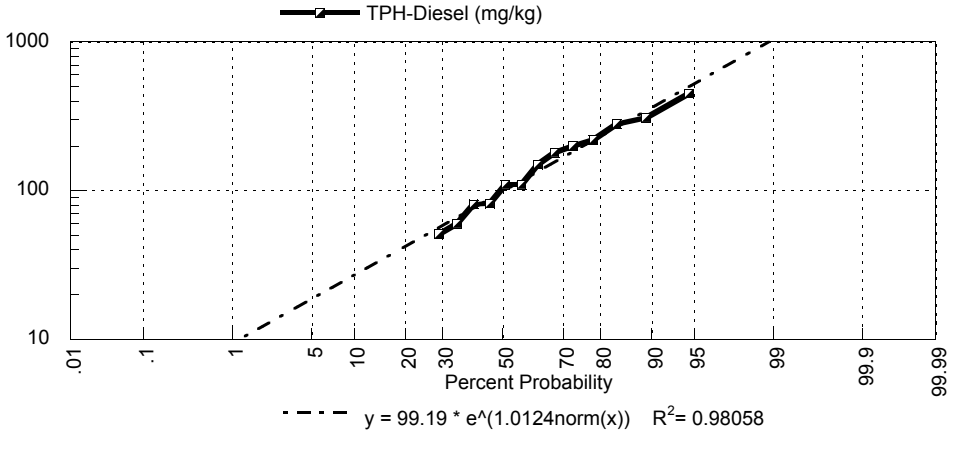
Vanadium



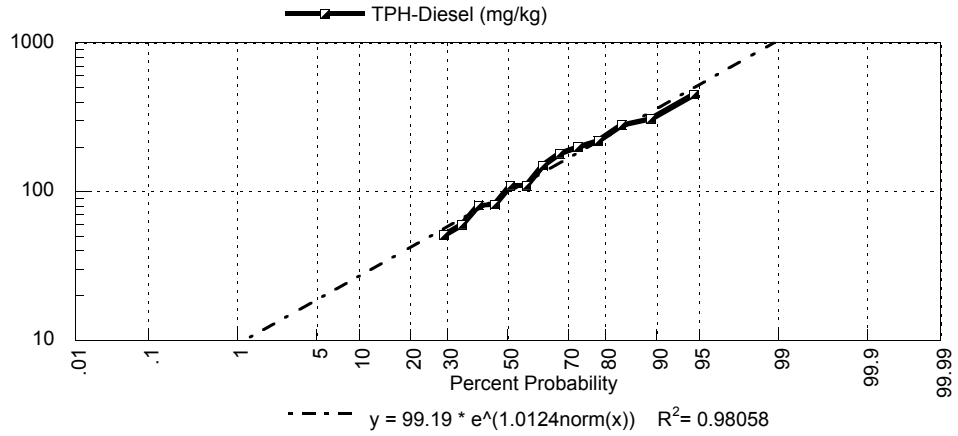
Zinc



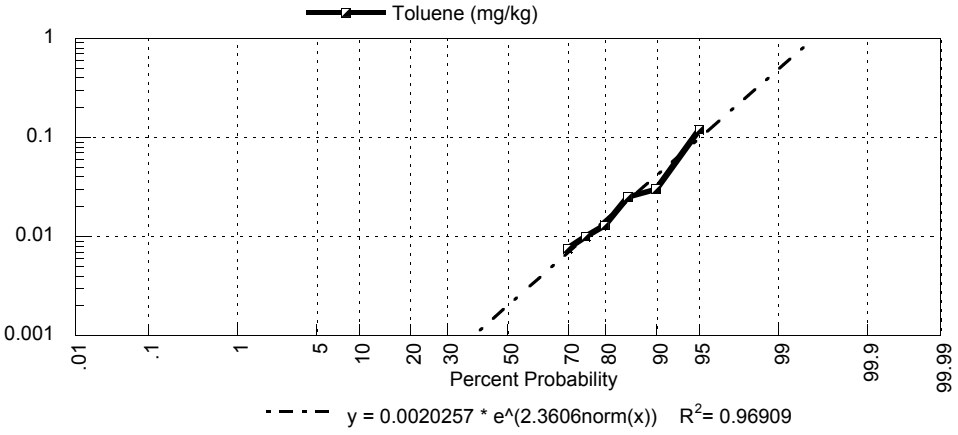
TPH - Diesel



TPH - Diesel



Toluene



APPENDIX **F**

Site Evaluation Summary

Caltrans Decanting-Pit Site Evaluation

Site No.	Site Code	Site Characteristics													Decanting-Pit Waste Characteristics	Existing BMPs				Comments
		Temporary Storage Site	Sweeper Waste	Highway Grindings	Base Material (Rocks, Fill, etc.)	Sand	Slide Material	Wood Chips, Tree Trimmings	Channel Cleaning	Litter	Private Citizen Dumping	Signage	Fence/gate	Driveway Material (A=asphalt, D=dirt, G=grindings, R=rock)		Run-on Prevention	Decanting location away from watercourses in area not prone to flooding	Sediment Control	Other	
1	SON-101-3.66-SB	X	X	X	X								x	D	No odor, no oil grayish-light brown color. Trash in pit.	Berm	Yes	Silt fence (one side of pit)		Decanting pit is enclosed in the Caltrans yard; White, solid thin layer of possibly salt in the waste area
2	SON-116-6.15-WB	X	X				X		X					D	No odor, no oil, rock, trash (hub caps, cans)	Berm	Yes		Barricades (DOT) blocking pit entrance.	Piles of slide material; Sweeper waste; Site directly off of Highway 116 SB; Driveway to pit is unpaved; Decanting pit is not in the shade
3	SOL-80-41.2-WB	X							X					D	Trash, small rocks, traffic cone, channel/creek cleaning material	Partly bermed, swale	No			Traffic cone wedged into recent decanting pile; Channel/creek cleaning material found in decanting site; Not quite bermed all around the site; Site located 50 ft from a wetland area
4	SOL-80-32.6-EB													D	Dry, cracked	Berm	Yes			Bermed on four sides; Little/no litter; Cracks in decanting pit - doesn't look as if used recently; No paved driveway; Minimal sample material
5	SOL-80-23.9-WB	X	X	X				X		X	X			G	Mostly dirt, rock	Berm, swale	Yes			Dead dog found in decanting pit; Oil drained/spot near entrance to site; Litter dumped near entrance to site (incl. 2x4's, beer cans, sheet rock); Driveway of highway grindings lead to the pit
6	SOL-12-3.2-EB													A	Light brownish material (rocks & fine waste material), no odor, no oil	Berm (mostly)	Yes			Driveway is paved asphalt; Waste decanted here is the same as decanted at site 5
7	SOL-12-17.5-EB																			Not currently used as a decanting site
8	CC-4-30.0-EB	X		X										D	Sediment, some trash, grit	Berm (3 sides)	Yes			Material pushed to back of pit, dirt scrapings also pushed back; Hwy grindings to the west of pit; Blank samples taken; Evidence of
9	CC-24-0.95-WB	X	X	X	X							X	X	A/R	Sediment, rock	None	Yes	Silt fence, straw bale @ D.I.		Waste material pushed to back of pit; "Vactor Clean Out Only" sign; not bermed
10	SM-380-4.8-WB	X		X	X			X			X		X	D	Foam, mud, sand, some litter	Berm	Yes			Pit is partly in shade; k-rails on two sides with steep sides that can erode; Not paved to pit; Tree trimmings pile above pit; Front end loader on-site; Piles of garbage next to pit; Possibly accessible to homeless; Area slightly windy (probably due to cars passing on the I-380 overpass)

Site No.	Site Code	Site Characteristics													Decanting-Pit Waste Characteristics	Existing BMPs				Comments
		Temporary Storage Site	Sweeper Waste	Highway Grindings	Base Material (Rocks, Fill, etc.)	Sand	Slide Material	Wood Chips, Tree Trimmings	Channel Cleaning	Litter	Private Citizen Dumping	Signage	Fence/gate	Driveway Material (A=asphalt, D=dirt, G=grindings, R=rock)		Run-on Prevention	Decanting location away from watercourses in area not prone to flooding	Sediment Control	Other	
11	SM-92-13.8-EB	X	X	X	X			X					X	D	No odor, no oil, litter, sandy sediment material, grayish-brown in color, slightly moist.	Berm	Yes			Located 60-70 ft from a tower w/ power lines; Bermed on all sides; Decanted waste found outside of pit on the unpaved driveway; Entire area is unpaved (packed dirt road)
12	SM-280-6.9-SB	X			X		X	X					X	D	Rock, sand, sediment	Berm (3 sides)	Yes	Silt fence		Low site; Locked gate; Slide material was covered at one point; All sides are steep dirt slope.
13	ALA-880-20.8-NB	X	X	X	X			X					X	A	1-2 inches of standing water toward SE end of pit, filled w/ trash (plastic bottles, plastic, foil)	Berm (3 sides w/conc. dividers)	Yes			Paved driveway into decanting pit; Part of the pit is in shade during certain parts of the day (morning); Soil at the site is clay to clay-like; Waste suspected to be from A St. off I-880; Sewer MH northwest of the site
14	ALA-580-17.7-WB	X	X	X										D	Dirt, sediment, sand, rocks, some litter	None	Yes	Silt fence		Six VACTOR piles, half jar samples were taken from each pile; Gravel around edges; No fence
15	ALA-680-7.48-SB	X	X	X								X		A	Garbage, dirt, sediment	Berm	Yes	Silt fence @ D.I.		Asphalt ramp; "No Dumping" sign; Yellow lane marker paint chips (lead?)
16	SCL-101-34.8-NB	X	X	X		X		X		X			X	D	Dirt, some garbage, sediment	Berm (3 sides)	Yes			Berm on 3 sides; Dug out pit; Standing water; Styrofoam; Major storage site; Berm along creek; Sand is bermed and covered under overpass
17	SCL-85-10.6-SB	X	X	X		X							X	G	Lots of Styrofoam, litter, silt, sand, sediment, muddy	Berm	Yes			Ramp made of grindings; Shaded pit area; Straw bales were used at some point; Parking lot stripes painted into dirt
18	SCL-101-0.0-NB											X	X	D	Rock, dirt, leaves	Berm (2 sides)	Yes			Bermed on 2 sides; "No Dumping" sign; Unpaved; Cones surround pit